The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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Training the Complete Chemist

THE newly instituted courses of training in applied chemistry in the University of Edinburgh, to which attention was drawn last week, indicate a demand for some preparation of a less purely abstract character than that which the universities have hitherto provided. Edinburgh in this matter does not stand alone. Already it is announced that at University College, London, developments of a similar kind are contemplated. Almost simultaneously we have Sir Arthur Duckham, as president of the new Institution of Chemical Engineers, drawing attention to the wider and more practical kind of training now in demand, and suggesting that the Institution, though not itself an examining body, might influence universities and other centres of training in providing courses for men desiring to hold combined chemical and engineering qualifications. There are two possible explanations of this new tendency. It may be due to the demand of employers for another type of chemist—not merely the student of pure science, working out in seclusion results for others to apply, but also a man of affairs, capable of managing works of which chemical processes are the foundation, of handling workmen, and generally of commercial supervision and initiative. Or it may be due to intelligent anticipation, on the part of university authorities, of a demand not yet actual but fast coming into view. Whether it is the one or the other or a combination of both need not greatly concern us. The important point is that the universities are becoming conscious of the need of something more than is available at present and are taking practical steps to meet it in advance.

The movement is certainly satisfactory in so far as it aims at a unified and complete training instead of a training undertaken in separate compartments. Hitherto it has often been a complaint that the chemist is too purely a theorist to be of much use in the application of his theories. On the other hand, the risk has been of specialised and applied studies failing for want of sound theoretical foundations. What is wanted is obviously such a unification of both kinds of training as will supply a complete equipment, and this is what our universities apparently have in view. The fact that the universities are taking this matter in hand is some guarantee that the principles of the science will not be neglected. There is a good deal in what competent authorities like Dr. E. F. Armstrong keep telling us that chemists who enter the service of firms must really know chemistry. If they fail here they fail at the foundations. This need not imply that they should know nothing else; it merely insists that other things should not be gained at the expense of what is fundamental. And if a way can be found, without sacrificing the basic qualifications, of adding others of a more immediately practical and applied character substantial gains may be attained without any qualifying losses.

The changed outlook is of interest, too, from the point of view of the chemist himself. It points to a wider and justifiable ambition. Frequently in these columns it has been pointed out that the responsible managerial posts fall to the engineer much more frequently than to the works chemist, and the latter has too placidly accepted the situation. There are distinguished exceptions of course, such as that of the head of a great chemical concern who once impressed his younger subordinates, when something went wrong with a pipe, by doffing his coat, dropping on his knees in the mud, and putting the matter right before they had realised what was wrong. He was not less a chemist because he was an engineer and a born leader also. Something of this spirit is now entering into the mind of the young works chemist. The new schemes of training for the larger positions will stimulate this latent ambition. There is no valid reason why chemists, without in the least sacrificing their chemistry, should not broaden their outlook. It may take some time, but the new tendencies seem to us to be in the right direction, and may end in giving us a new race and type of chemists capable of themselves applying their science to industrial and commercial ends instead of leaving such applications to others.

Effects of the Ruhr Occupation

It is still difficult to say definitely and without qualification what the effect of the Ruhr occupation is upon British chemical industry, because while some interests benefit others may suffer, and a temporary advantage or disadvantage may later be converted into the opposite. For the moment, however, the effects on the whole appear to be favourable. The merchant class, particularly those closely associated with the handling of German products, complain of the difficulty of doing business with the districts affected. It is quite a genuine complaint up to a point, but may be easily exaggerated. On the other hand, the British dyestuff industry has undoubtedly gained materially from German difficulties, the British colour user having been reminded afresh of the folly of becoming dependent again on foreign sources of supply. Several branches of the chemical and other industries benefit also, because Germany is not only greatly weakened as a competitor in home markets, but is becoming a buyer of raw materials at high prices. Against these immediate advantages must be placed the serious factor of delay in the stabilisation of European conditions. Further, there may be an indirect effect on our exports. Germany normally obtained many classes of raw materials from our overseas possessions, for which she paid, and with this money our possessions imported British goods. The interruption of this roundabout process may partly explain the decrease in our own exports. On the whole it may be said that for the moment Germany as a competitor is weakened and the British position is strengthened, but the obvious gains may later be qualified by less tangible though real losses.

The Corrosion of Aluminium

Aluminium, as all associated with the practical side of chemistry know, is a metal which is now being employed to a considerable extent in the chemical and other industries for the reason that there is a large number of products which have little or no effect upon it. Considered purely from the standpoint of its use for constructional work aluminium promises to make a good deal of headway in the near future, even though its tensile strength is barely half that of mild steel. We refer to this metal because some few days ago a chemical engineer, who has recently been employing it fairly freely but who was by no means certain as to its ability to withstand ordinary forms of corrosion, confessed to us that he had little knowledge of the behaviour of aluminium in this respect, and that his own experience had not been of sufficient length to enable him to form an opinion. We agree that the question of the corrosion of aluminium is significant at the present day, and no doubt the ultimate effect must be largely dependent upon the purity of the original metal. In fact, the greater the purity and the less the variability which the material exhibits, the greater will be its resistance to ordinary corrosive influences.

When information is sought upon corrosion in its many phases one can generally turn with profit to the opinions of Dr. Newton Friend, who tells us that normally aluminium tarnishes upon exposure to air, so that the layer of oxide formed, adhering closely to the metal, provides good protection against further corrosion under temperate climatic conditions. On the other hand, the action which occurs is considerably accelerated by a rise in temperature. Accordingly, in hot tropical countries, where moisture is plentiful, the metal corrodes more rapidly, and the coating of oxide, though apparently continuous, may in reality be minutely porous. So far as the action of water is concerned, reference may be had to the work of Seligman and Williams, who have pointed out that immersion in most waters leads firstly to a superficial etching, gas being evolved and aluminium hydroxide formed, the action then being put a stop to by the production of a film of calcium carbonate. It is generally agreed that the formation of a resistant film in the early stages of corrosion is the best means whereby to effect protection; but so far as special measures are concerned mention might be made of such processes as that of making the aluminium the anode in a bath containing a sulpho-compound of molybdenum, when a brown deposit is formed which is said to be quite flexible and highly resistant. Possibly some of our readers may be able to give us their own experiences with the metal or tell us of any particular protective measures which they have adopted.

Sir Alfred Mond's Reply

In the debate in the House of Commons on Tuesday on the socialisation of "the instruments of production and distribution," Mr. Philip Snowden referred incidentally to the case of chemical workers, and he received from Sir Alfred Mond a particularly effective reply. In contrast with Mr. Snowden's airy descriptions of the idle rich who live on the industry of the workers—based, we believe, on a purely academic acquaintance with the British workshop—Sir Alfred presented an instructive piece of actual industrial history in the following terms: "It is now nearly fifty years since two young men, with very little money, decided to start a new enterprise. Their capital was insufficient, but their optimism was very great. They adopted a process entirely unknown in this country. They asked people who knew the industry to come in, but could not induce anyone to share the risk. They struggled on, and they founded a concern that has given good wages and good conditions of labour for fifty years. Those young men were my father and Sir John Brunner. That enterprise could never have been commenced under any socialist system I have ever heard of." It is just that ambition which led Dr. Ludwig Mond and Sir John Brunner to found the great concern associated with their names which the socialist system so confidently recommended to us would kill. If private capital is to be abolished houses bought by the workers and the costly furs in which Labour M.P.'s wives now appear will have to be included in the "pool." When Sir Alfred reminded the House of this result the Labour members shouted "No." Of course. Socialise capital as much as you like so long as it is somebody else's capital. When wealthy Labour leaders set the example of sharing their possessions with their poorer brethren instead of always seeking to reform mankind at other people's expense, their doctrine of "all for each and each for all" may begin to sound more convincing.

Power Alcohol Production

In the concluding paragraphs of the article on the production of power alcohol by Mr. Rex Furness (which is completed in this issue), it is pointed out that the method described would produce an independent supply of motor fuel in the event of the failure of petrol supplies through war or world shortage. This in itself is of great importance, and makes the article worth serious study. Moreover, it is possible that the estimated cost of 2s. 2d. per gallon could be reduced At the moment, however, such a price, it must frankly be confessed, is not practicable, and it is difficult to see how the alcohol could be sold in the face of the present price of petrol. Alcohol, in fact, is now being sold in this country, mixed with a proportion of hydrocarbons making it eminently suitable for motor fuel, at 1s. 4½d. per gallon. To compete successfully with petrol such a price is necessary, as alcohol gives a lower power output per gallon. It is understood, however, that this fuel is produced by the distillation of waste molasses, of which the supply is necessarily limited, so that it can hardly be considered a solution of the fuel question. On the other hand, the method described by our correspondent definitely might be, if the price could be made slightly more favourable. Apart from the financial considerations, which we have though it well to point out, the method seems to us to be theoretically sound and practicable, and it is certainly worth attention in that it would provide a possible fuel supply in times of emergency, at a price little above those ruling at the moment, and comparing very favourably with the price of petrol at 4s. 7d. per gallon three years ago.

A Week at Cambridge

As already announced in The Chemical Age, the annual meeting of the Society of Chemical Industry will this year be closely associated with the meetings of the International Union of Pure and Applied Chemistry, and both will be held at Cambridge during the week beginning June 18. The meetings of the International Union will occupy the first three days of the week, and they will be open to any members of the Society who care to attend. The annual general meeting of the Society is fixed for the morning of Thursday, June 21, when the members will be welcomed to Cambridge by the Vice-Chancellor of the University, and Dr. E. F. Armstrong will deliver his presidential address. In the evening there will be a reception and a lecture on Cambridge and its colleges. The principal features on Friday will be an address by Dr. Carpenter, who will be presented with the Society's medal, a lecture by Dr. F. W. Aston on "Isotopes," and the annual dinner. On Saturday the members will visit Ely. It will be seen that the programme is considerably shorter and less strenuous than that of last year.

Our Spring Issue

Next week's issue of The Chemical Age will be our annual Spring Number, and will be one of the largest yet published. In consequence of the Easter holidays the journal will go to press a day earlier than usual, and matter intended for publication must reach us not later than Wednesday morning next.

Points from Our News Pages

The concluding section of our contributor's article on the production of power alcohol by a new method is given this week (p. 304).

Speeches on the dyestuffs situation were delivered at the annual dinner of the Dyers and Colourists Society by Sir William Alexander, Mr. Woolcock, Mr. Sutcliffe Smith, and others (p. 306).

At the first corporate meeting of the Institution of Chemical Engineers Sir Arthur Duckham spoke on the work and prospects of the Institution. (p. 308).

Business is described in our London Market Report as generally satisfactory. German quotations are not so much in evidence (p. 318).

Prices remain firm, with a good demand, according to our Scottish Market Report (p. 321).

Books Received

The Generation and Utilisation of Cold: A General Discussion. London: The Faraday Society. Pp. 136. 10s. 6d.

Dizionario di Merceologia e di Chimica Applicata. Vol. I. By Prof. Dott. G. Vittorio Villavecchia. Milano: Ulrico Hoepli. Pp. 870. Lire 35.

A Tested Method of Laboratory Organisation. By Seymour Pile and Reginald Johnston. London: H. F. and G. Witherby. Pp. 98. 7s. 6d.

Organic Chemistry. Vol. III.: Heterocyclic Compounds. By Victor von Richter. London: Kegan Paul, Trench, Trübner & Co., Ltd. Pp. 326. 25s.

Chemical Technology and Analysis of Oils, Fats and Waxes. By Dr. J. Lewkowitsch. London: Macmillan and Co., Ltd. Pp. 508. 36s.

A Method for the Identification of Pure Organic Compounds. Vol. IV. By S. P. Mulliken. London: Chapman and Hall, Ltd. Pp. 238. 30s.

Vital Factors of Foods, Vitamins and Nutrition. By Carleton Ellis and Annie L. MacLeod. London: Chapman and Hall, Ltd. Pp. 391. 25s.

A Comprehensive Treatise on Inorganic and Theoretical Chemistry. Vol. III. By J. W. Mellor. London: Longmans, Green and Co. Pp. 926. 63s.

Laboratory Manual of Physical Chemistry. By A. W. Davison and H. S. van Klooster. London: Chapman and Hall. Ltd. New York: John Wiley and Sons, Inc. Pp. 182. 10s.

The Calendar

Mar. 24	Royal Institution of Great Britain: "Atomic Projectiles and their Properties" (Lecture VI.). Sir E. Rutherford. 3 p.m.	Albemarle St., Piccadilly, W.1.
24	West Yorkshire Metallurgical Society: Discussion on Utilisation of Scrap Metals in Industry.	Halifax.
27	Hull Chemical and Engineering Society: "Vat Dyestuffs." W. Thevenaz. 7.30 p.m.	Hull Photographic Society's Rooms, Grey Street, Hull.
27	Society of Chemical Industry (Birmingham Section): "The Reaction between Ammonia and Sodium Hypobromite," by D. R. Nanji and W. F. Shaw; "Some Studies in Catalytic Hydrogeneration," by E. J. Lush.	The Univeristy, Edmund Street, Birmingham.
April 4	Society of Public Analysts: Ordinary Meeting. 8 p.m.	Burlington House, Piccadilly, W.1.
6	Institute of Metals (Sheffield Section): Annual General Meeting. 7.30 p.m.	Mappin Hall, University of Sheffield.
10	Society of Chemical Industry (Birmingham Section): Annual Meeting.	Birmingham.

Power Alcohol from Calcium Carbide.—II.

By Rex Furness

In the second portion of this article the author concludes his argument for the industrial production of alcohol from calcium carbide. The first instalment was given last week.

Acetaldehyde from Acetylene

THE method by which acetylene is caused to add upon its molecule the elements of water, and thus produce acetaldehyde is too well known to require more than a brief notice. It is with the consideration of the costs of the manufacturing process that the writer wishes to deal. Acetylene is pumped at a quick rate through a solution of sulphuric acid, say 20 per cent., containing about 0·5 to 1 per cent. of mercuric oxide (which, of course, dissolves) to act as hydrating catalyst. At a temperature of about 60° C. the reaction is quite rapid and the acetaldehyde formed passes off with the unused acetylene. The aldehyde is removed as rapidly as possible, so that the formation of condensation and polymerisation products shall be reduced to a minimum. The aldehyde is condensed in chilled brine cooled condensers, any escaping with the acetylene being trapped in water scrubbers, through which the excess of acetylene passes before recirculation. The aldehyde from both the condensers and scrubbers is purified by distillation.

One of the greatest economic difficulties encountered in the technical operation of this process at first was the small yield of aldehyde relative to the amount of catalyst employed. That is to say, in a comparatively short time after the commencement of the passage of acetylene the mercuric catalyst became reduced to a sludge of mercurous compounds and free mercury, which possessed little, if any, catalytic activity. Frequent additions of fresh catalyst were required, and, at regular short intervals, the sludge had to be settled and the operations recommenced *ab initio*. The spent catalyst requires an oxidation treatment before reuse. This was accomplished by the Canadian Electro Products Co. (who worked this process for the production of acetic acid and acetone as final products) by an electrolytic oxidation in alkaline medium. The small yield of aldehyde per unit of catalyst, necessitating recovery, adds materially to the cost of the desired product, but this yield was gradually increased by preventing as far as possible the reduction of the mercuric catalyst, and the prevention of the deposition of condensation products of acetaldehyde upon the catalyst sludge.

Reviving the Catalyst

A recent patent, however (British patent No. 124,702 *et seq.*), renders the "outside" recovery of the catalyst by expensive and inconvenient processes less frequently necessary. When, in the ordinary course of operation of the process, the rate of absorption of the acetylene slackens, an oxidising agent is added to the reacting solution. The mercurous sludge is oxidised to the mercuric (active) state, and absorption again commences at almost the original rate. This process may be repeated until the accumulation of resinous aldehyde condensation products renders the further hydration of acetylene impossible. At this stage the solution may be filtered from the sludge and the latter washed free from the organic by-products and submitted to the same oxidation treatment in fresh acid solution. Many substances may be utilised as oxidisers, such as hydrogen peroxide, salts of manganic or permanganic acids, or the free acids, pyrolusite, etc. It is, however, preferable to use the water-insoluble substances, as they are not so quickly reduced by the acetylene as are the soluble oxidisers, and are, in general, cheaper.

The absorption of acetylene is more rapid as the concentration of mercuric oxide catalyst is increased, within certain limits, but about 1 per cent. calculated on the amount of solution employed is found to give the maximum absorption, regard being had to the ultimate yield of aldehyde per unit of catalyst taken. As an example of the quantitative details of the reaction, upon which costs may be estimated, the following may be quoted. A 20 per cent. solution of sulphuric acid in water containing 1 per cent. of mercuric oxide and 2½ per cent. of ferric sulphate is taken. Acetylene is absorbed rapidly by this solution, which is agitated by means of the gas current itself, and the solution is not in contact with any metal parts, since in this case the metal would assist in the reduction of the mercuric catalyst to the inactive state. About every two hours, two grammes of pyrolusite are added to every two hundred of solution, and the passage and absorption of acetylene are resumed. In a trial lasting thirty hours, after eleven such additions, twenty-two grammes of pyrolusite in all, the reaction was stopped. It was found that 489 grammes of aldehyde had been produced.

Practical Production of the Aldehyde

At this rate of over-all production, a kettle holding 1,000 gallons would serve for the manufacture of over nine tons of aldehyde per day. In the intermittent Canadian process, acetylene was passed at a rate of 70 cubic feet per minute through 1,000 gallons of solution, and assuming a 66 per cent. absorption, this means that about four tons per day only could be produced in such apparatus. It is clear, however, that even with this lower output the labour cost of this stage of the complete alcohol synthesis would not be large. The process is simple of control, and when the routine of the reaction is established several "kettles" could be supervised by one man. Another man could operate the stills, and a third the pumps, motors, compressors for the acetylene and for the refrigerating system—let us say twelve men per day of three shifts, during which would be produced in three "kettles" at least twelve tons of aldehyde. Thus a charge of from 10s. to 12s. per ton of aldehyde would devolve upon this stage, and be decreased as the efficiency of acetylene absorption increased. The power charges upon the process are light. An 8 h.p., 6 K.W.H., consumption refrigerator will suffice for the condensation of aldehyde, both from the acetylene stream and in the rectification, per ton of aldehyde produced per day, and if the output be substantial, proportionately much less power is required. Pumps, and gas compressors furnish a very light load, as the acetylene is sent forward at a pressure just sufficient to overcome the back pressure of the scrubbers. With electricity at 0·1d. per unit, about 1·5 shillings per ton of aldehyde produced should be sufficient allowance.

The cost of raw materials must now be considered. The calcium carbide and the hydrogen consumed in the next stage have already been calculated upon an over-all cost basis per ton of synthetic alcohol, and should not cost more than 1s. 2d. per gallon of spirit. Thus in this stage we have to consider the cost of sulphuric acid, oxidiser for the catalyst sludge (for example, using pyrolusite) and ferric sulphate.

On the basis of production already referred to, 489 parts of aldehyde are obtained, using 200 parts of dilute sulphuric acid, 20 per cent., that is, 40 parts H_2SO_4. The acid used in the oxidising reaction with pyrolusite, with an allowance for losses in the process, is reckoned at 30 parts, or 70 parts in all. Thus one ton of aldehyde requires one-seventh of a ton of sulphuric acid, costing, say, £1 5s. The quantities of pyrolusite and ferric sulphate, about 4·5 and 1·0 per cent. respectively on the aldehyde produced, do not represent a charge of more than £1 per ton of aldehyde. Finally, the steam used in the rectification columns in aldehyde distillation is small in quantity. Assuming that 90 per cent. of the aldehyde is condensed in the brine cooled condensers, and that 10 per cent. passes into the scrubbers, to form a 5 to 7 per cent. solution, the steam consumed in rectification will not be more than 30 lb. per 100 lb. aldehyde, or about 650 lb. per ton of aldehyde, and the cost about 5s. Thus, the total cost per ton of aldehyde should not exceed £3 3s. 6d.

With a margin of 1s. per gallon of alcohol left in order that the spirit should be produced at the factory at 2s. 2d. per gallon (1s. 2d. having been calculated as the cost of basic raw materials) and 275 gallons to the ton, this still leaves almost £11 to cover the stage in which aldehyde is hydrogenated to alcohol, and to provide for interest on capital, depreciation, etc., and profits.

It is probable that this final stage is the most difficult to carry into practice technically. The reaction itself was studied by Sabatier and Senderens, who noted that it proceeds

favourably in the presence of reduced nickel or copper, at temperatures between the boiling point of alcohol and the temperature of decomposition of aldehyde into carbon monoxide and methane. On a technical scale, however, the questions arising from the exothermic nature of the reaction must be considered. Local overheating and consequent decomposition of aldehyde very easily occur, and yields of alcohol suffer, and the catalyst soon becomes inactive, due to the formation of resinous aldehyde condensation products. The Elektrizitatswerke, Lonza, overcome the difficulty by the passage of much more hydrogen than is necessary for the hydrogenation of the aldehyde, thus carrying away the heat of reaction. In a second modification, this company uses hydrogen containing about 0·3 per cent. of oxygen, finding that in the absence of small amounts of this gas ethyl ether is formed to a more or less considerable extent. The alcohol produced is fractionated from any unchanged aldehyde, and the excess hydrogen is continuously circulated.

Cost of Hydrogenation of the Acetaldehyde

It is difficult to form even approximate estimates of the costs in this stage of the synthesis. With careful attention to temperature and purity of aldehyde, and the maintenance of an active catalyst, the reaction should proceed on the large scale as well as in the laboratory. The cost in the direction of fuel for heating will be very small, and the aldehyde can easily be volatilised by means of the stream of hydrogen. In the use of large excesses of the latter losses are bound to occur in circulation, and unless great care and special apparatus are used the losses may be very heavy.

It is possible, too, that a hydrogenation of aldehyde according to the Paal, Skita method may be found possible. With a catalyst which would effect the hydrogenation of liquid aldehyde or aldehyde in solution (by means, say, of colloidal platinum or palladium) many advantages would result. The reaction could be carried out under pressure and at a comparatively low temperature, both factors conducive to greater success, as is evident from a consideration of the equation :—

$$CH_3 \cdot CHO + H_2 \rightleftarrows CH_3 \cdot CH_2 \cdot OH + \text{heat},$$

upon the basis of simple thermodynamics.

Hydrogen losses would be less considerable, and the process would be more easily under control. In the vapour hydrogenation process, which has of course been in successful technical operation, catalyst recovery should not be too difficult or costly an operation, for even if a " dry " regeneration were impossible, and solution in acid, precipitation of metallic hydroxide or carbonate, and re-reduction were necessary, a heavy charge per ton of aldehyde hydrogenated would not be incurred. One part of catalytic reduced metal should serve for the hydrogenation of from 50 to 100 parts of aldehyde. If, on the other hand, a direct regeneration of the reduced metal were possible, say, by oxidation of the metal with simultaneous burning off of the resinous and carbonaceous deposits, and re-reduction, the cost would be still less. Such a regeneration of catalyst has been practised in Sabatier's hydrocarbon " cracking " process, where, after the " cracking " catalyst, consisting of a reduced metal, has become inactive, oxidation of the metal and burning off of deposited carbon in a stream of air or steam is effective.

Thus, although approximately exact costs cannot be estimated in this stage of alcohol synthesis from calcium carbide, there would seem to be no reason why the process should not be capable of operation at a cost well within the £11 margin remaining, after basic raw materials have been provided for, and, in addition, the costs of the conversion of acetylene into acetaldehyde. Allowing, as Desborough has done in his paper read to the British Association meeting at Cardiff in 1920, a charge upon alcohol production of 4d. per gallon to cover interest on capital, depreciation, etc., and profit (a figure representing about £4 10s. per ton of alcohol produced), at least £7 per ton of product should be available for expenditure in the hydrogenation stage.

Electrolytic Reduction of Acetaldehyde

There is one process which has not been put into technical operation as yet, but which deserves brief mention. It is claimed by Pascal (British Patent No. 140115), that acetaldehyde can be hydrogenated by means of nascent hydrogen developed by electrolysis. Aldehyde or para-aldehyde is added to the kathode chamber of an electrolytic cell, in which dilute sulphuric acid is used as electrolyte. In certain conditions of operation, alcohol is produced and is recovered by distillation. In the absence of a suitable diaphragm, oxidation of aldehyde occurs at the anode, and the acetic acid formed here is inevitably brought in contact with the alcohol produced at the kathode. Reaction takes place with the formation of ethyl acetate.

If, moreover, the kathode liquor contains a mercuric salt, acetylene itself can be passed into the kathode chamber and becomes hydrated to form acetaldehyde in a manner similar to that above described. The intermediate product—aldehyde—is hydrogenated and alcohol is obtained.

Conclusion

Thus it is suggested that the method of producing any desired amounts of ethyl alcohol for power purposes is possible in England without any disturbing effects in other directions, if electrical power is made available at a low cost, say, 0·1d. per unit. This possibility is not remote if we may take the assurances of hydro-electric experts, and various schemes have been advanced, which promise success, despite the fact that England possesses relatively little water power as ordinarily defined.

It is estimated above that, in these circumstances, the basic raw materials for alcohol synthesis from calcium carbide would not cost more than 1s. 2d. per gallon of spirit produced (£16 per ton), that the conversion of acetylene to acetaldehyde should not cost more than about £3 5s. per ton, and that the hydrogenation of the aldehyde should be possible at a cost not exceeding £6 to £7 per ton. Calculating in all £25 per ton of alcohol produced, or 1s. 10d. per gallon of 100 per cent. spirit, still leaves a margin of 4d. per gallon before a cost of 2s. 2d. per gallon is reached. This figure, 4d., should cover profit, interest, depreciation, etc., and thus allow of alcohol being produced at 2s. 2d. per gallon at the factory.

A final word may be allowed in respect of the difficulty of figuring the cost of a process at a time when materials, labour, etc., are and have been far from stabilised in price. Moreover, the selling price of petrol with which power alcohol must necessarily compete—at any rate in the near future—is being steadily lowered.

Nonetheless, it is believed that the above estimates present a fair approximation to the cost of synthetic alcohol.

In any case, the process provides a means of ensuring an alternative home supply of internal combustion engine fuel in the event of failure of petrol supplies, or in case petrol prices advance considerably by reason of world shortage.

A similar supply of alcohol cannot be produced from home-grown starch-containing materials without drawing largely upon potential foodstuffs.

Tropical and semi-tropical starches evolve transportation charges, whilst the problem of the biological saccharification of cheap cellulose is not yet solved.

Spanish Fertilisers

PREPARATIONS are in progress for the exploitation on a large scale of the potash deposits near Suria, in the Province of Lerida, Spain. A Belgian concern is now building an immense plant, which, it is said, will have a production capacity more than equal to the total Spanish consumption. The product is already being placed on the market, and it is thought that Spain will soon cease to import fertilisers of any kind if production in Lerida is increased as expected.

Experiments have been carried out at Caceres, in superphosphate works belonging to the Union Española de Explosives, for the purpose of determining what use can be made of the low-grade phosphates which are rather abundant in the Spanish deposits. If the results obtained in the laboratories are confirmed in practice, it is reported that several million tons more of this fertiliser will be made available for Spanish consumers.

The Founder of Metallography

THE second Sorby lecture, delivered by Dr. Cecil Desch at Sheffield last October, has now been published as a pamphlet by Sheffield University (price 1s.). The lecture deals with the original work which Dr. Sorby carried out in a spirit of pure scientific interest on the nature of iron and steel of various kinds, by examination of etched specimens.

The Society of Dyers and Colourists

Speeches at the Annual Dinner

THE annual dinner of the Society of Dyers and Colourists took place at Bradford, on Friday, March 16. Mr. S. J. Pentecost, of Nottingham (president), presided, and others present included the Lord Mayor of Bradford (Alderman Thomas Sowden), Mr. Charles F. Cross, F.R.S. (recipient of the "Perkin Medal"), Mr. H. Sutcliffe Smith (retiring president), Sir William Alexander, K.B.E., D.S.O. (chairman of the British Dyestuffs Corporation, Ltd.), Sir Max Muspratt (United Alkali Co., Ltd., and Association of British Chemical Manufacturers), Mr. W. J. U. Woolcock (Association of British Chemical Manufacturers), Mr. J. A. Brewin (Prime Warden, Worshipful Company of Dyers, London), Mr. P. W. L. Ashley and Mr. W. Graham (Board of Trade), Sir William Priestley, Sir Joseph Turner (Huddersfield), and Sir William Wade.

Sir William Alexander

In proposing the toast of "The Society of Dyers and Colourists," SIR WILLIAM ALEXANDER said that it would be presumption on his part, with a limited knowledge, to enumerate and pay commensurate tribute to all the many objects and achievements of the Society—large in its numbers and equally great in their scientific and technical qualifications. Through the goodness, however, of their worthy secretary he was less ignorant than otherwise he might have been on detail concerning their progress and ambition. Considered in conjunction with the objects, the actual achievements such as their journal, the allocation of the Perkin and Worshipful Company of Dyers medals, their Colour Index, and research schemes—they were to be congratulated on making good, and were now in process of making still better.

Their Society to-day was specially appropriate to the necessity of the hour, for were they not, by every combination of patriotic effort, endeavouring against heavy odds to build up for commercial and national security a great key industry, which by right and initial invention should have been ours from its inception? Unfortunately, from lack of application, they had now to make up leeway against a nation which had had half a century's start and a consuming field more or less to itself. The task was by no means hopeless, but every factor of sympathetic assistance and constructive criticism which could be utilised by organisations such as theirs quickened the pace and brought the common goal nearer. Undoubted and relatively great success had already crowned the efforts of a comparatively short period, but much remained still to be accomplished before they could say that determination, application, and common purpose had consolidated—he hoped sooner than later—within their own lines a large and efficient industry as a commercial and scientific asset.

Why Dream of Failure?

Why should they dream of failure? Might he emphasise the very advantageous position of Great Britain as compared with Germany, or, indeed, any other country, in regard to raw materials? We had the coal and we had the distillation products of coal. This was realised as far back as 1862 by a very famous German chemist, Hofmann, who was at that time professor of chemistry in the Royal School of Mines.

Dr. de Mouilpied had unearthed the following from the Report of the Jury at the International Exhibition of 1862. It was the official report on chemical products, and was as unfamiliar as it was striking:—

> *"Probable Influence of the Industry of Coal-Tar Derived Colours upon the Commercial Relations of Nations*
>
> "These considerations open up to view a chain of impending economical consequences important to the world at large, and likely, as Playfair has pointed out, to influence in a remarkable manner the industrial fortunes of Great Britain.
>
> "For, if coal be destined sooner or later to supersede, as the primary source of colour, all the costly dyewoods hitherto consumed in the ornamentation of textile fabrics; if this singular chemical revolution, so far from being at all remote, is at this moment in the very act and process of gradual accomplishment are we not on the eve of profound modifications in the commercial relations between the great colour-consuming and colour-producing regions of the globe? Eventualities, which it would be presumptuous to predict as certain, it may be permissible and prudent to forecast as probable; and there is fair reason to believe it probable that, before the period of another decennial exhibition shall arrive, England will have learned to depend, for the materials of the colours she so largely employs, mainly, if not wholly, on her own fossil stores. Indeed, to the chemical mind it cannot be doubtful that in the coal beneath her feet lie waiting to be drawn forth, even as the statue lies waiting in the quarry, the fossil equivalents of the long series of costly dye materials for which she has hitherto remained the tributary of foreign climes. Instead of disbursing her annual millions for these substances, England will, beyond question, at no distant day become herself the greatest colour-producing country in the world; nay, by the strangest of revolutions, she may ere long send her coal-derived blues to indigo-growing India, her tar-distilled crimson to cochineal-producing Mexico, and her fossil substitutes for quercitron and safflower to China, Japan, and the other countries whence these articles are now derived."

The Colour-maker of the World

Perkin, who discovered mauve in 1866, was a pupil of Hofmann. Hofmann was himself busily engaged at work on these colours, starting with magenta, and he recognised what an enormously fruitful field was being opened. Aware of our resources, familiar with the capacity of the Englishman, on terms of friendship with all our chemists of distinction, Hofmann, looking into the future, saw England as the colour maker of the world. Although we failed to profit by Dr. Hofmann's common-sense exhortation until late, very late, in the day, and then only under stress of want and necessity, the colour makers of Great Britain had already proved themselves of genuine service to the consuming industry, and under conditions as they existed to-day must be saving those consumers many sleepless nights. The British dyestuffs makers were to-day in a position to supply over 80 per cent. of the dyestuffs requirements of this country, and that of excellent and satisfactory quality. The figure was not his own. It had been generously conceded, in open discussion, by the users themselves. Generally, consumers and producers in this country were united in the view that the industry must be maintained—it was already established—and developed for commercial and national well-being.

The only discussion where there was not unanimity was one of policy. How was the child (which competitors would strangle in infancy) to be nursed and protected till it could fight for itself? Was it to be the charge of the consumers solely or spread over a wider circle? The settlement of this one question on which any difference of opinion existed had brought the usual hive of busybodies into the open. If politicians and other critics without knowledge of facts would leave the consumers and makers to thrash out their own battles, with assistance from the Board of Trade, valuable time and attention now being dissipated on question and answer would be released for concentration on things that mattered. The prosperity of the industry was bound up "hip and thigh" with the prosperity of the textile and other consuming interests, and each side realised the difficulties of the other.

Lessons from the Ruhr

During the past few weeks a distinct change of front had become apparent amongst those few who had previously advocated that "cheap dyes" was all that counted. Examine for a moment the happenings in the Ruhr as they affected this country to-day. River and railway transport in the Rhineland had ceased to function; the supply of coal tar products from the Ruhr had been cut off to the German dyestuff factories; goods were held up by the French authorities unless manufacturers had obtained permits, and the German manufacturers refused to apply for them. The stoppage of coke ovens meant, of course, a cessation of benzol production, with the inevitable result that German factories would be forced to reduce or cease manufacture.

The British consumer might shortly have to depend very largely upon the British manufacturer, and the latter should be in a position to assist the user over most of the difficulties which might arise. Very many British colour consumers had for some time past taken the great bulk of the dyestuffs requirements from the domestic industry, and they had no qualms as to the quality supplied.

If the position to-day were the same as before the war, when we depended on Germany for over 80 per cent. of our dyestuffs, the British cotton, wool, and other colour using industries might be faced (indeed, would be faced) with a critical situation. Surely this was another object-lesson of the necessity for a British dyestuffs industry, and users must acknowledge, one and all, the short-sightedness of any policy which would leave us at the mercy of the competition of German dyes offered at absurdly low prices owing to the depreciated value of the mark. Their ability to compete at all had now been curtailed, at all events for a time, and from inquiries from abroad it would appear that Great Britain was not the only country whose German supplies might fail. He had detained them longer than he intended, but dyestuffs policy was so much in the limelight at the moment that he had trespassed on their indulgence. "Every helpful hand," he concluded, "is of value to-day, and your Society can provide many, and strong. We have confidence in ourselves, but by our efforts we wish to establish beyond doubt not only your confidence in us but the support and interest which your Society can render to a common cause." (Applause.)

Mr. W. J. U. Woolcock, seconding the toast, said there was still a considerable amount of prejudice in favour of foreign dyestuffs, due to their long use with eminently satisfactory results. That prejudice had to be lived down. The British dyemaker had to remember that whatever the position between user and maker in this country, owing to the situation in the Ruhr, it was incumbent upon him not to do anything in the nature of increasing prices, which would destroy the amicable feeling existing at present. (Applause.)

The President, responding, reviewed the activities of the Society, and claimed that in keeping before the textile world the great benefits derived from the application of chemical principles to the bleaching and dyeing industries, they were materially helping to bring about British supremacy in those industries and the textile trade generally. Manufacturers were now realising that scientific methods were the real philosopher's stone. The synthetic dye industry was one striking example of this fact. (Applause.)

The Perkin Medallist

The President then presented the Society's "Perkin Medal" to Mr. C. F. Cross, F.R.S., for his discovery of viscose in 1892.

Proposing "The Perkin Medallist," Mr. Sutcliffe Smith expressed regret that the Dyestuffs Act, so intricate and involved with such serious bearing on Great Britain's industrial future, not to mention her national security, should be brought into the political arena for party advantage instead of being tackled unitedly by all parties for the ultimate benefit of the nation. The constant dragging of this subject into the political atmosphere was having the most disturbing and unhinging effect on those engaged in the industry, particularly the scientific men. He congratulated British dye makers on the great progress they had made during the last few years, not only in the quality, but also in the variety, of their wares. Roughly speaking, before the war they used 70 to 80 per cent. of German dyewares, and to-day they were using 70 to 80 per cent. of British, without suffering in the quality of their productions.

Mr. Cross, in his reply, said that viscose was now capitalised to the extent of £100,000,000. Nobody could yet measure the degree to which this artificial product was capable of being a substitute for natural products, but he felt that the full possibilities of cellulose had as yet only been scratched. He thought they would find that in this invention of viscose, and through it and its consequences, Great Britain would be able to hold its own as the primary pioneer and leading textile producing nation of the world for many generations to come.

Colour Identification

Artificial Conditions Equal to Sunlight

The difficulty of viewing colours truthfully under any form of artificial illumination is well known to colourists and all those who have to do with the identification of colours, and in order to prevent mistakes it is customary for colour matchers to work only by daylight and, in this country at any rate, with a north light. The vagaries of our climate and the number of dark days we get in the winter months, added to the impossibility of identification of colours by sunlight, very gravely interfere with correct identification, and natural light conditions vary so much that colour identification becomes very much of a hazard. Dyers, colourists, and others who experience these difficulties may therefore be interested in the Macbeth lamp, whereby it is claimed colour identification becomes as sure and unfailing as by the best of daylight.

These lamps are designed from extensive studies in close co-operation with retail merchants, the buyers for retail and wholesale establishments, examiners for converters, dyers, experts in dyes, and the grading experts in raw silk, cotton, wool, etc. Used in many industries for colour or other critical eye-taxing examinations, these lamps take the peak of the work out of the few good hours of natural daylight and spread the day's effort over a longer period, thereby increasing production, reducing colour troubles, eliminating eye difficulties, and saving the hurry with its consequent element of error. They are not used for general illumination nor for the lighting of large areas, but for special locations where colour identification is required. The illumination at these points for critical examination is from ten to fifty times greater than ordinary interior artificial lighting intensity. These high intensities are equally as important as is colour of light to satisfactory visibility, and this kind of lighting applied to large areas is neither necessary nor practical.

Of many hundreds of these lamps now in use, the greater number are of the "colour identification" type—the lamps that supply not only a white light like daylight but ordinary electric light as well. Colours may be instantly observed both for day and evening effects, and matches or harmonising combinations can be proved satisfactory or rejected more easily and with absolute certainty only when viewed under these two common, widely different, colour-of-light effects. A match in daylight may result in an undesirable contrast under the ordinary electric light used in interiors, or the resulting colour sensation may be quite different, although pleasing and otherwise satisfactory.

Reproduced Daylight

The reproduced daylight from these lamps, which is produced by ordinary clear glass incandescent lamps, the light from which is corrected by passing through a special filter, so that it is modified in quality to be the same as natural daylight in its effect on colours, has been vouched for during several years of practical everyday use by hundreds of colour experts checking against good natural daylight with thousands of colours, shades, and hues in all kinds of fabrics and materials.

No attempt has been made to "standardise daylight," which varies in colour from sunlight to blue-sky light. The colour filters in Macbeth lamps are graded over a similar range, so that any desired daylight equivalent can be supplied. The average demand has been met with an "overcast sky" equivalent. If the purity of the light from any lamp does not meet the desired conditions, the proper filter can be furnished without additional charge. All filters, which are a solid glass with the colour in the glass (not applied to the surface to peel, check, or to be scratched off), are guaranteed against heat breakage, fading, or change of colour of the light, provided only that standard clear glass incandescent electric bulbs, either plain or frosted, of proper size and voltage rating are used. The exterior parts of the lamps are made of high grade material—bronze, brass, copper, and vitreous enamelled steel—all of which are guaranteed against defects as to material and workmanship. There are no adjustments to make, and the only moving parts are in the switches, which are the products of well-known electrical manufacturers.

These lamps, with the exception of the filter, which is of American manufacture, are made in England, and the British agents, A. D. Lang, Ltd., 42, Berners Street, London, W.1, offer to send out lamps on test.

Colonel Joseph McMullen

An American Visitor's Impressions of England

COLONEL Joseph McMullen, the chairman of the United States Commission, which sits with the British Royal Commission on Awards to Inventors as a joint commission for the trial of claims against the respective Governments arising out of aircraft patents, designs, and manufacturers' secrets used by the United States during the war, leaves England on his return to America on March 29, after a stay of over three months in this country. Colonel McMullen (who is very well known in the American chemical industry) arrived on December 6 on his first visit to England, and though he has been closely occupied with his judicial duties he has had sufficient leisure to see something of English city and country life and to meet representatives of various British industries, especially chemicals and dyestuffs. Though, as becomes a responsible official of another Government, he is guarded in his expression of opinions, there can be no doubt that, on the whole, he has been very favourably impressed by his experiences.

"My work," he told a representative of THE CHEMICAL AGE before his departure, "in connection with the trial of these claims has been most pleasant, and the British officials with whom I have had to deal have done all they could to make my work agreeable. The best proof of our good understanding is the fact that we have been able to compose all our differences and to vote awards unanimously in every case. My reception by the British people, particularly by the Government officials I have had to deal with, has been most cordial, and fully justifies the suggestion that there should be more frequent visits between the people of both countries. Personal contact in the settlement of business matters between the two countries is so much more satisfactory than any other method that it should always be resorted to if possible. Everyone I have come across has shown a degree of fair-mindedness not generally supposed to exist. I shall always look back on my trip here and the duties performed as an accomplishment of which I shall always be proud, and I am looking forward to many visits in the future. As a member of the legal profession, I have been greatly impressed with your judicial system and with the eminently fair-minded spirit in which questions are decided. You are not influenced by sentiment; you administer dry and impartial justice to all, and I leave impressed with the excellence of your legal system."

In the United States Colonel McMullen has been much interested in the chemical and dyestuff industry, and he has made inquiries into it here and discussed the situation with many prominent members of the British chemical industry. He was among the most interested visitors to the British Industries Fair, especially the Chemical Section. Though the latter is small compared with America's huge expositions, Colonel McMullen thought it very well done, and expressed the view that such exhibitions are well worth persevering with as a means of general propaganda for national trade.

Referring to the chemical industry here, he thought, from the inquiries he had made, that the conditions in many ways resembled those in the United States. In both countries chemicals had to be produced on a large scale during the war, and now the problem was to find peace outlets and uses for the new production. He regarded liberal expenditure on research as one of the necessities of the future. In many respects the two nations found themselves when they entered the war in the same boat, and in many respects they were in the same boat still. He felt more than ever convinced of the essential unity of the two nations and of the need for ever-increasing friendship and co-operation.

Colonel McMullen was reminded of the visit he had paid last October, in the company of General Fries, the editor of THE CHEMICAL AGE, and others, to the headquarters of the American Chemical Warfare Service at Edgewood. He admitted, with a laugh, that he had been unable to join the General in some projected duck shooting expeditions, and he had had no sport in England owing to pressure of duties, but he had seen something of English country life as well as of social life in London, and he was returning with very pleasant and favourable memories of all he had experienced.

On Wednesday evening, at the Reform Club, Colonel McMullen, together with a party of friends, was entertained to dinner by Mr. W. J. U. Woolcock.

Institution of Chemical Engineers

Address by Sir Arthur Duckham

THE first corporate meeting of the Institution was held on Wednesday, March 14, 1923, at the Hotel Cecil, London. About forty corporate members were present, with the one honorary member (Mr. W. J. U. Woolcock). The President (Sir Arthur Duckham) occupied the chair. After the usual formal business the report of the provisional committee, elected to bring about the formation of the institution, was read and adopted.

The PRESIDENT pointed out that the Institution of Chemical Engineers was an endeavour to produce chemical engineers, and to hall-mark such men, so that their opinions and services might be accepted at their true value. The principal object, therefore, of the Institution was education. Other learned societies had assisted the institution considerably, and thanks were especially due to the Chemical Engineering Group of the Society of Chemical Industry and the parent body, and also the Institute of Chemistry, the Institution of Mechanical Engineers, and other bodies. The Institution would help to materialise the dream he had had for some time—viz., a federation of learned societies interested in engineering and chemical work. It was hoped that the Institution would get into touch personally with all the educational forces in the United Kingdom. It would persuade universities, colleges, and schools to devote a proportion of their work to the ultimate production of chemical engineers. The drafting of courses in chemical engineering was a matter which was occupying the attention of the council at the present moment. It was to be hoped also that the Board of Education would help.

A very cheering sign of the times, he said, was the fact that the Ramsey Memorial Chair in Chemical Engineering at University College was becoming an accomplished fact It was his hope that the decision to found a chair in chemical engineering at Liverpool University would materialise shortly. The action of the London University in this respect was one which would stimulate others to consider the question.

Although the Imperial College of Science and Technology had commenced chemical engineering instruction some 11 or 12 years ago, it had not yet made chemical engineering a primary subject. The Institution would naturally serve as a centre for chemical engineering education generally, and would make the standard of its associateship and membership such as to render it the recognised authority on the subject. It would take care, however, that its work did not affect, adversely any other learned institution; it would, in fact assist all other bodies having cognate interests.

The publications of the Institution would be restricted to chemical engineering subjects of the highest standard, and every effort would be made to afford within the Institution itself a means of information and knowledge which should be as perfect as possible. At the present moment, several schemes were occupying the minds of the members of the Council, and it was hoped that shortly some announcement might be made.

The question of professional conduct was one which concerned them very closely, and it was certain that the Institution would keep a jealous eye upon the good name of its members in this respect. He hoped that the Institution would always ensure that its members should be "gentlemen" in the best sense of the term.

Colonel Sir Frederic Nathan congratulated the provisional committee on the work they had done, and expressed his great appreciation of the objects of the Institution. Others present spoke in similar terms and also contributed useful remarks on the future conduct of the Institution. Among these may be mentioned Messrs. E. A. Alliott, W. Newton Drew, W. J. U. Woolcock, J. Arthur Reavell, Capt. C. J. Goodwin, F. A. Greene, C. E. Sage, H. Spence, J. MacGregor and M. B. Donald.

Empire Council of Mining and Metallurgy

THE Institution of Mining and Metallurgy, in their report for 1922, state that the council in conjunction with the council of the Institution of Mining Engineers have given serious consideration to the desirability of linking together the sister institutions within the Empire, and have adopted suggestions with a view to uniting the mining and metallurgical engineering professions in an "Empire Council of Mining and Metallurgical Engineering Institutions."

The Title "Chemist"

To the Editor of THE CHEMICAL AGE.

SIR,—The Retail Pharmacists' Union, in their recent announcement with regard to the subject of the accurate dispensing of medicines, have, I think it will be generally agreed, made a good statement on behalf of the profession of pharmacy.

I would, however, venture to place before your readers a matter arising from the above which is one of no small concern to those chemists who are engaged in the practice of *chemistry* as distinct from *pharmacy*—that is to say, who are concerned with the science of chemistry and its applications to the arts and manufactures, and have nothing to do with the dispensing of medicines.

The Retail Pharmacists' Union have headed their announcement with the words "The Chemist"; and I would like to make in the public press the suggestion which has so often been made in the scientific press, that the time has come for the pharmacist to relinquish the use of the term "chemist" in favour of those who definitely practise chemistry.

The war was instrumental in directing the attention of the public more closely to the existence of the profession of chemistry, the profession on which the country found it necessary to rely for the production of explosives and materials of war generally, as well as for the means of protecting our troops against the methods of chemical warfare initiated by the enemy.

During the past half-century the science of chemistry has developed by leaps and bounds, and its practice as a profession has become more and more firmly established. In this country the science is now taught in 1,000 or more public and secondary schools, and in nearly 300 technical schools, while our University Departments of Chemistry are renowned throughout the world.

The Institute of Chemistry, as the representative chartered professional body of chemists, numbers upwards of 4,000 Fellows and Associates, whose qualification demands a four years' University course, or the equivalent, and the majority of whom are engaged in the many branches of industry on which the science has a bearing.

In other countries the strict equivalent of the word "chemist" signifies, as it should, one who professes chemistry, and not in any case the pharmacist, druggist or dispenser of medicines. How the misapplication of the word has arisen in this country is a matter which I need not here pursue. The enormous importance of chemistry is becoming daily more widely recognised, and it is highly desirable, in order to avoid confusion, that the word "chemist" should be confined to those who practise chemistry in the full sense of the word. It is bad enough when mental confusion is the unfortunate consequence of the poverty of a language, but in this instance the correct and distinctive words are ready to our hand.

I would like to express the hope which I have already expressed on a good many occasions, that our friends the pharmacists—notwithstanding the provision of the Pharmacy Act—will lose no opportunity of referring to their ancient and important calling by the word which more accurately defines and describes it. In addition, I would appeal to the press, which is so important a factor in the enlightenment of the general public, to assist so far as they can by employing the terms "chemist" and "pharmacist" respectively in their obviously correct significations, so that those practising chemistry may be described as chemists, and those practising pharmacy as pharmacists.—Yours, etc.

A. CHASTON CHAPMAN, F.R.S.,
President of the Institute of Chemistry of Great Britain and Ireland.

30, Russell Square, London.
March 17, 1923.

Neutral Sulphate

To the Editor of THE CHEMICAL AGE.

SIR,—We have noticed with considerable interest your correspondent's communication on "Neutral Sulphate of Ammonia Difficulties" in your issue of March 10 and your article alluding to same. We are pleased to note the emphasis laid on the fact that neutralising sulphate of ammonia does not affect the question of making a good sale, as in many cases we have found considerable confusion of thought on this point. We would, however, question the expediency of drying the salt by artificial means. Passing the salt through a drier is detrimental, both injuring the crystal structure and in most cases tending to spoil the colour.

So long as the British Sulphate of Ammonia Federation arranges the price of sulphate of ammonia under standards, it does not, perhaps, much matter as to the quality and appearance of the salt, provided the standard is complied with, but with an open market the best salt would be saleable where an inferior one could only be sold at a lower price and when a small demand occurs not at all.

The elimination of the drier—costing, as your correspondent mentioned, £250, excluding power to drive it—materially affects the capital cost and working expenses of a small works. With the system we are handling the cost of plant, etc., need not be more than £250 or £300 for a small works, and the neutralised and dried salt would be equally as good as that produced in a large works. Thus, the cost of producing dry neutral salt would be approximately as follows:—

TWO TON PLANT (OR, 400 TONS PER ANNUM).	s.	d.
Say, 12½ lb. Ammonia Carbonate at 5d.	5	2½
6 h.p. per hour for 7 hours at 1d. per h.p. hour	3	6
Interest and depreciation on, say, £300 at 10 per cent., equals 1s. 6d. per ton, or, for two tons	3	0
Repair and Maintenance		6
	12	2½

12s.2½d. divided by two equals 6s.1¼d. per ton for neutralising and drying.

The product should be a salt of 25·6 per cent. ammonia and (say) 0·4 per cent. moisture, which has been found sufficiently dry to work with agricultural drills, and has the advantage of remaining in bags to its destination and not being distributed on the way, as happens often with salt that has passed through a drier.—Yours, etc.,

HOOPER AND WEYMAN.

Pilgrim House, Newcastle-on-Tyne.
March 17, 1923.

Money from Ashes

To the Editor of THE CHEMICAL AGE.

SIR,—I was much interested with your leader in last week's issue of THE CHEMICAL AGE (March 17) on "Money from Ashes." It has for long seemed strange to me that use is made of draught gauges, and CO_2 recorders, and yet tons of combustible matter are sent to the waste tip, and, also, so far as I know, that no attempts have been made to utilize the heat from the glowing clinker, which would be better than subsequent recovery.

Noting what you say—that "a defined movement has been noticed on the part of consumers towards recovery of combustible matter, always present in ashes withdrawn from boilers"—I went to-day (Tuesday) to discuss with a works manager the possibility of making trials with a view to economy. After explaining my idea and making such a trial as was possible with the prevailing arrangements, the manager, turning to the fireman, asked if he did not think it would be better and more comfortable in working if so and so were done; without in the least giving him the idea of the working. He at once agreed that that would be so and said that at a certain mills this was done and worked well, at the same time explaining how it was done, which was in almost the exact words that I had used in describing my idea to the manager. He said that all was burned out and the clinker cooled in such a way that the heat was utilized; also, the firemen liked the method. I cannot say more about it The process may be patented, but, anyway, the thing can be done.—Yours, etc.,

Moorgate, Stalybridge. W. WARR.

The Organ of the Chemist and Chemical Engineer

THE head of a Yorkshire firm, under date March 19, writes:—"The writer is an original subscriber to THE CHEMICAL AGE, and he can speak of its value as the organ for the chemical and chemical engineering industry, and its assistance to the trained chemist who has had to turn his many years of laboratory and factory experience into merchanting raw materials and finished products on the basis of scientific knowledge."

Trade and Industry in Germany

Conditions since the Ruhr Occupation

THE Commercial Secretary at Berlin (Mr. J. W. F. Thelwall) has forwarded to the Department of Overseas Trade a report of the Prussian Chamber of Commerce on the state of trade and industry in Germany during February. The report states that in spite of the cutting off of the industrial west from the remainder of Germany, it has, in general, been possible to maintain industry in the Ruhr district and on the Rhine, as well as in the rest of Germany, during the month of February. The Ruhr coal, so far as it is not required within occupied territory, is being accumulated at the pit dumps and in the depots of the large works. The non-delivery of reparation coal to France and Belgium practically makes good the reduction of output which has naturally taken place since the occupation. Unoccupied Germany is helping itself by means of increased production and larger imports, above all, of English coal, so that the demand can be covered. It was endeavoured to make up for the shortage of pig iron—firstly, by an increased production of this material in Upper Silesia; finished iron was also delivered on a large scale thence, while the occupied territory had, to a large extent, to work on stock.

The most striking event on the money market was the fall of the dollar from 52,000 to nearly 22,000, which was manipulated by the German Government and the Reichsbank. This measure, which a little while ago was still held to be impracticable, was necessary in order to facilitate the covering of increased purchases from abroad, above all of coal. Price reductions have not yet occurred to any great extent. In the retail trade particularly, a decrease in prices was impossible, owing to the fact that, in most cases, prices had not by any means reached the level of the dollar. The only exception was the case of those goods, such as margarine, lard, oils, etc., which are manufactured directly from imported raw materials. For the rest, the rise of coal prices and of freights formed a strong counter-weight against any reduction in prices. Increases of wages also strongly influenced prices; as compared with January, they amounted on an average to 90–120 per cent., in the case of miners even to 170 per cent.

Mining Industry

The events in the Ruhr district accentuated the importance of Upper Silesian pit coal for the coal supply of the country. The Coal Commissioner of the Reich drew larger supplies of such coal for dispatch to South Germany and Saxony, at the same time partly diverting Upper Silesian coal from the coastal districts, as these are better able to obtain supplies of English coal. Besides English coal, the import of coal from the Ostrau mines, which is particularly suitable for use in gasworks, has begun. With the enhanced importance of Upper Silesian coal, it is to be regretted that the output in January has not increased. Extra shifts have been worked in only a few instances; accidents occurred in two mines, resulting in a decline of output, and, finally, these accidents made it necessary to adopt temporary measures of safety, which caused work to slow down. Partial strikes also took place. The increased demand had, therefore, to be covered mainly in East Upper Silesia.

Potash

In spite of the occupation of the Ruhr, the full maintenance of the potash industry was possible. Only comparatively small quantities of individual goods were stored. The sale of potash raw salts have, however, again fallen off as a result of increased railway freights, the latter already far exceeding the value of the goods. The call for by-products of the potash industry was only partially satisfactory; considerable quantities of sulphate of potash were, however, exported to the United States of America. The prices of potash rose on February 1 by 150 per cent., and on February 14 by 70 per cent. By-products from chloride of potassium became also proportionately dearer. The truck supply was very good, as also were the coal deliveries.

Aluminium

In the Lüdenscheid aluminium and finished metal goods industries employment was bad, and the outlook for the future is not at all favourable. The industries are suffering from diminished foreign sales, and consequently the removal of the export duty and of foreign trade control is more than ever urgently desired. Further, the cheapening of German raw aluminium is demanded, the prices for which have increased in spite of the fall of the dollar.

Chemical Industry

No details are available with regard to the chemical industry in the occupied territory. In general, however, it may be said that the chemical industry of the south portion of the occupied territory is suffering from a scarcity of coal. In the northern portion conditions are better. No restrictions of work have yet taken place. On January 29 wages were raised by 50 per cent. On February 12 a further advance of 78 per cent. was effected. This means an hourly wage for unskilled workers of 1,780 marks.

Glass Industry

In the sheet glass industry very few inland orders were received. The general export figure remained unaltered. The works which deliver to the Russian border states lost practically their whole market as a result of cheaper offers from the Czecho-Slovakian glass industry. In the hollow-glass industry the supply of raw materials, with the exception of soda, was adequate. The substantial advance in the prices of raw materials, in wages, and in freights resulted in a further increase of sale prices. Shorter working hours had partly to be introduced. There were few inland sales. Complaint was also made regarding the falling off in foreign orders.

Oil Industry

As a result of the occupation of the Ruhr district, the oil industry is, without exception, dependent on English coal, which adds considerably to the cost of production. Employment was generally satisfactory, and, apart from hindrances caused by foreign competition, no interruption of any importance in sales occurred. The increasing competition of foreign producers on the inland oil market makes the reintroduction of protective tariffs more and more imperative.

The Planning of Chemical Laboratories

AT a meeting of the Chemical Association of the Northern Polytechnic on Tuesday, March 13, Mr. T. P. Bennett gave a lecture on "The Construction and Equipment of Chemical Laboratories and Factories."

Dealing principally with the question of laboratories for institutions, he pointed out that in all work of the kind the architect required very definite details from the scientific department as to the nature of the work the rooms were intended for, the arrangement and number of gas and water points, the number of fume cupboards, arrangement of benches, and so on. Though tiles formed the most suitable wall covering for chemical laboratories, they were expensive, and acid-resisting glazed paints were now available of more than one kind, so that they would not deteriorate under the influence of various gases. An acid-resisting cement, however, was not available, and it was a matter in which research was needed. The lecturer also dealt in detail with the essentail qualities of various special laboratories, balance rooms, etc., and considered questions of heating, lighting, and ventilation.

Referring to factory planning, at the end of his paper, he said there was one important factor in factory work which was of vital importance, and that was the co-ordination of processes, or the progress sequence of processes which must take place in every large building. In most cases the factory had grown up from a comparatively small beginning and had been added to from time to time until its scientist-owner or manager considers that he had an efficient building, because he had become used to it. Actually this building might be extremely inefficient. When labour rates were high, as at present, it was necessary that organisation, and every other factor bearing on the financial aspect of production, should be as perfect as possible. Efficiency in buildings was the result of the joint efforts of the scientist-owner and the architect, but in many cases in his experience he had found that this was realised far too little, and that only by forcibly emphasising its necessity could efficient buildings be produced. Something of this organisation is required in technical schools, but the question is not quite so vital. He hoped to have an opportunity at some future date of dealing fully with the question of factory equipment, as it was a subject in which he had had some experience.

Chemicals at the Photographic Fair

THE number of chemical exhibits at the Photographic Fair at the Holland Park Hall from March 15 to 24 was very small. The largest stand in this connection was that of Johnson and Sons (Manufacturing Chemists), Ltd., Cross Street, Finsbury, London, who were showing a good range of their photographic chemicals. Prominent on the stand were a 12 in. dish containing silver nitrate crystals of a large size and specimens of their cwt. barrels of sodium carbonate, sulphite and hyposulphite. Another interesting exhibit showed the stages in the production of pure Metol-Johnsons and Hydrokinone-Johnsons from coal, through coal tar, aniline and the crude products. Other specimens included a special anhydrous "hypo," one part of which is chemically equal to one-and-a-half parts of the normal hydrated salt. Other products shown in the form of fine crystals were potassium chloroplatinite, gold chloride, "pyro," thiocarbamide, etc., while bottled specimens illustrated the wide range of fine chemicals such as paramidophenol and glycin produced by this firm.

A similar range was exhibited by Johnson, Matthey and Co., Ltd., 78, Hatton Garden, E.C.1, whose principal speciality is chemically pure silver nitrate, which it is claimed will pass a spectroscopic test for other metallic elements. Other important products of this firm, which were shown both in the form of attractive crystals and packed samples, are non-deliquescent gold chloride, potassium chloroplatinite, barium platinocyanide and ammonium chloroplatinite.

Besides various packeted developers, etc., shown by nearly all dealers, the only other chemical exhibit was on the stand of Ilford, Ltd., Ilford, the dry-plate manufacturers, who were showing specimens of three of the dyes used in the preparation of their colour-sensitive plates. These were rather dully coloured powders, which are named Sensitol Red, Green and Violet, and which are prepared for the firm in the laboratories at Cambridge under the direction of Dr. W. H. Mills and Sir W. J. Pope.

The Demand for Nitrate

IN their review, Aikman (London), Ltd., state that the European market has been very active throughout the past fortnight, with a strong demand from consuming centres all over the Continent, and business has been on a large scale. Stocks at 15th inst. were about 187,000 tons, and afloat 247,000 tons, as compared with 581,000 and 47,000 tons respectively at same date last year. Judging by sales already made, deliveries from now to end of May are likely to compare favourably with last year's figures, and unless important new shipments are arranged European stocks at the end of the season will be reduced to a minimum. The improvement in the value of the mark and the competition from Chilean nitrate has resulted in the Stickstoff Syndicate reducing its prices for synthetic nitrogen products to figures which at to-day's exchange represent sterling prices of £12 7s. 6d. for nitrate of soda; £15 17s. 6d. for sulphate of ammonia; and £11 10s. per ton for cyanamide.

The Producers' Association have sold during the fortnight about 120,000 tons of nitrate, of which 85,000 tons for March-April and 35,000 tons for June shipment, making their total sales for shipment after July 1, 1922, about 1,895,000 tons (of which 1,635,000 tons for shipment up to April, 1923). At a meeting held in Valparaiso on 15th inst. it was officially announced that no more sales for June 16-30 shipment would be made at the old price of 19s. 1d. per metric quintal, and an extraordinary general meeting of the associates has been called for 4th prox., with a view to altering the present statutes and empowering the directorate to at once fix prices for forward delivery, instead of waiting until May. If this is agreed to a meeting will be held on 9th prox., to agree formally to these forward prices. At the same time it is anticipated that pourparlers will commence for the renewal of the association for five years.

The demand in the United States continues satisfactory, and about 60,000 tons were bought for that market from the Producers' Association during the fortnight, of which 45,000 tons for early shipment. Endeavours are still being made by American importers to divert some of the cargoes intended for Europe to their own market, but so far only one cargo has been secured by them.

Opinions on the Dyestuffs Act

THE following opinions on the working of the Dyestuffs Act and the Safeguarding Act were given by representatives of the manufacturers, merchants, and colour users at a recent meeting of the Chemical and Allied Trades Section of the Manchester Chamber of Commerce recently.

The Manufacturer

Sir William Alexander said: Since the early 'eighties to the beginning of the war the British colour-using industries were almost entirely dependent on Germany for their supplies. I do not think that I am disclosing any great secret when I tell you that at the present time 80 per cent. of the dyes consumed in this country are being produced by the British dye-making industry. Further, we have it on record that not only are our dye consumers producing goods equal in every respect to those which they produced before the war with German colours, but they are producing to-day better goods, and giving at least as great guarantees with those goods as they did before the war. It would not take a very large sum of money to subsidise this industry, but unfortunately it leads to precedents which our Government at the present time is afraid to face.

The Merchant

Mr. F. T. T. Reynolds (Millwards Merchandise, Ltd.) said there was general agreement that British trade should be fostered, and that so far as is practicable the country should be self-contained regarding essential supplies of dyes, fine chemicals, and certain other commodities. But there was wide disagreement with the principles adopted and the methods employed. The German Reparations Recovery Act was in the same category with the Dyestuffs Act and the Safeguarding of Industries Act. The Bills were conceived under war conditions, and rushed through Parliament. The Acts, bad in themselves, had been made insufferable through imperfect administration. They had not achieved the objects aimed at, and had introduced incredible delays, inconvenience, and uncertainty in the import trade.

The Colour-User

Mr. Sutcliffe Smith said a point he wished to stress very strongly was that the consent of the majority of the colour-users was obtained to the Dyestuffs Act on condition that its incidence should not jeopardise the colour-using industries. He went on: "The Act, coupled with the method of importing and distributing reparation dyestuffs obtained under the Treaty of Versailles, the users contend—and very definite evidence can be produced to prove their case—is seriously affecting their industries and prejudicially affecting the export trade."

Other points the speaker emphasised were the following: The colour-using trades were now bearing the burden of the cost of establishing the dye-making industry in this country, which, by increasing their cost of production, was retarding the rehabilitation of its great export business. Proceeds of the disposal of reparation dyes should be applied to the dye-making industry. The price of dyestuffs ruling in this country was from 300 to 400 per cent. above pre-war, whereas the wholesale prices index figure is 58·5 per cent. above. He was of opinion that there was one direct way of answering this question which would be fairer to all parties, namely, a subsidy on the part of the Government to the British dye-makers. In the long run that would be very much cheaper not only to the colour-user but to the nation as a whole.

German Chemical Trade

ACCORDING to *The Times* Special Correspondent in Berlin, the German trade in chemicals is comparatively quiet. Prices are, however, not weakening, and only certain fertilisers are cheaper. Some coal by-products are even stiffening. Stocks are diminishing, due partly to the stoppage of supplies from the Ruhr. A new company with a capital of seventy-five million marks for the exploitation of the Bergin system of extraction, the Rossleben Bergin Company, has been founded by the Gesellschaft für Teerverwertung (Coal-tar Company), the Riedel Company, and the Erdöl und Kohlenverwertungs Gesellschaft (Oil and Coal By-products Company). The new works are at Rossleben. The Gesellschaft für Petroleum-industrie, Berlin, is also largely interested.

Chemical Matters in Parliament

Safeguarding Act

Sir R. Hamilton (House of Commons, March 19) asked the Chancellor of the Exchequer the latest figures showing the revenue which had been received to date during the current financial year under the Safeguarding of Industries Act.

Major Boyd-Carpenter replied that the revenue received under the Safeguarding of Industries Act during the current financial year up to March 10, 1923, the latest date available, amounted to £509,000.

Poison Gas

Mr. Newbold (House of Commons, March 15) asked the Under-Secretary of State for War whether, seeing that the seizure by the French Government of the towns in Baden had put it in possession of dyeworks and chemical factories capable at the shortest notice of producing great quantities of poison and other gases of military utility, he would say whether his Majesty's Government was taking any precautionary steps in the matter.

Lieut.-Colonel Guinness, in his reply, stated that the hon. member was under a misapprehension, as no facilities for producing poison gas existed in the towns referred to.

Import of Dyestuffs

Mr. Short (House of Commons, March 19) asked the President of the Board of Trade the total imports of alizarine and other anthracene dyes during the years 1913 and 1922 respectively.

Lieut.-Col. Buckley stated that the imports into the United Kingdom of alizarine and anthracene dyestuffs during the year 1913 amounted to 60,813 cwts., valued at £272,245. In the year 1922 the imports of alizarine dyes amounted to 11,387 cwt., valued at £60,607. Owing to a change in classification, which became operative in January, 1920, separate particulars of the imports of anthracene dyes in 1922 were not available.

Exports of Dyed Yarns to China

Mr. Graham White (House of Commons, March 19) asked the Parliamentary Secretary to the Overseas Trade Department if he was aware that the British export trade in dyed yarns to China was being crippled by the competition of yarn dyed locally with cheap German dyes; and whether it was proposed to take any steps.

In reply, Lieut.-Col. Buckley said that he understood that China had for many years imported British grey yarns in large quantities for dyeing locally, and that the trade in dyed yarns with that market had in consequence been small. He did not think that there was any action which could be usefully taken.

Mr. White inquired whether it would not be a simple remedy to repeal the Dyestuffs (Import Regulation) Act, to which no reply was given.

A Research Chemist's Affairs

MR. GEORGE EDWARD HEYL, King's House, Kingsway, London, a research chemist who had been interested in schemes for the manufacture of oil, attended at the London Bankruptcy Court on Friday, March 16, for his public examination. His statement of affairs disclosed liabilities, £77,760, with an estimated surplus in assets of £228,910. The assets consisted as to £300,000 of the value of the sale of his interest in processes, leases, buildings, plant, book debts, cash and stock at Barking and Corton, near Weymouth, to a company, it having been intended to manufacture oil at those places.

The debtor said that he was born in Berlin, and had been naturalised in this country. He formerly carried on business in the chemistry trade. In 1912 he took offices in King's House, Kingsway, and became engaged in research work in connection with the production of oil from British natural resources. In that manner he expended a considerable sum of money. Oil was actually produced on a small scale. In October, 1916, a syndicate was formed for the purpose of financing his undertakings for oil at Barking and Corton, and in May of the following year a company called the Rapid Distillation and Power Co., Ltd., was formed with a nominal capital of £1,000,000 to acquire his entire interest in the inventions. The consideration for the transfer was ultimately fixed at £160,000 in shares and £90,000 in cash. He denied that he was insolvent and attributed his present position to breaches of the agreement for the sale of his business.

The debtor further stated that he was appointed by a syndicate to proceed to Esthonia and report on certain oils. He afterwards visited Sweden, whence he proceeded to Germany and later on to Paris. Since his return to England he had been carrying on his profession of chemist. At one time he was instructed by the Admiralty in connection with the manufacture of oil from shale, and he bought for £10,500 works at Barking. In May, 1917, the Rapid Distillation and Power Co., Ltd., was formed to acquire the business and patents and processes which he had. He was appointed the managing director, and later on chief technical adviser at £6,000 per annum. Afterwards there was a modification of the agreement, by which, *inter alia*, he became scientific adviser and chemist for five years. A still later agreement again modified the terms. In August, 1917, for certain reasons he repudiated one of the agreements, and litigation ensued, one action being brought for specific performance. On the last action an order was made for the appointment of a receiver of the assets of the company.

The Registrar remarked that apparently the debtor first had recourse to moneylenders in 1917, and he now appeared to be owing them £16,328.

The debtor considered that the money so obtained was very dear, but he expected at the time he obtained the loans to be paid by certain people. Had those funds been forthcoming he would have been able to repay the loans.

The examination was concluded.

Dublin Fine Chemical Co's Affairs

AT a meeting of the creditors of Fine Chemicals, Ltd., 40, Mary Street, Dublin, held recently in Dublin, a statement of affairs presented showed liabilities amounting to £15,716 9s. 10d., of which £10,866 5s. was due to trade creditors. There were also partly secured creditors for £13,850 4s. 10d., who held security valued at £9,000, leaving £4,850 4s. 10d., to rank as unsecured. The assets consisted of cash £322 15s. 5d., stock estimated at £5,506 1s. 5d., machinery valued at £1,047 3s., furniture, fittings, &c., estimated to produce £1,536 16s. 5d., rent due £29 3s. 4d., investments put down at £646, good book debts estimated to realise £5,463 6s. 7d., and doubtful and bad debts put down at £260, making total assets £14,811 6s. 2d., from which had to be deducted £769 18s. 6d., for preferential claims, leaving net assets £14,041 7s. 8d., or a deficiency of £1,675 2s. 2d. After discussion it was decided to confirm the appointment of Mr. W. Conan as liquidator.

Artificial Fertiliser Transactions

AT the London Bankruptcy Court on Thursday, March 15, Theophilus Morgan Davis, 6, St. Martin Street, London, who had been interested in an artificial fertilizer, attended for his public examination on a statement of affairs showing liabilities £6,477, of which £1,631 were expected to rank, and assets £99, absorbed in part payment of a preferential claim. In 1894, the debtor began business as a chemist with a capital of £35. In October, 1913, he transferred the business to another person and was afterwards employed as manager until March, 1921. He was subsequently managing director and secretary of a company until the date of the receiving order. The debtor attributed his insolvency to loss incurred (returned in his deficiency account at £2,000) in connection with the proposed purchase of an artificial fertilizer, and to his having been held, in an action brought against him, liable for payment of certain commission.—The examination was concluded.

High Temperature Alloys

VARIOUS processes in chemical engineering call for extremely high temperatures—e.g., electric furnace work and high-temperature carbonisation. The difficulty of working at these temperatures is largely one of having a suitable metallic alloy available; but, according to a correspondent in *The Manchester Guardian*, there are now a number of nickel-chromium alloys which will withstand temperatures of over 2,300° F. (1,260° C.), some of which have other remarkably useful properties—e.g., a very high tensile strength at the high temperature, or a high resistance to corrosion under the same conditions. It may also be noted that "stainless steel" (iron-chromium alloy) is almost as useful in this connection.

From Week to Week

TROBRIDGE AND CO., LTD., announce that their address is now 6, Dene House, Ellison Place, Newcastle-upon-Tyne.

THE U.S. Industrial Alcohol Co. of New York announce that their new address is the Bowery Savings Banks Building, 110, East 42nd Street, New York.

THE CHILIAN NITRATE PRODUCERS' ASSOCIATION will meet early next month with a view to empowering the directorate to fix new forward prices without delay.

THE VICE-CHANCELLOR of Cambridge announces that the subject for the Adams Prize for 1923-4 will be "The Physical State of Matter at High Temperature."

RECENT ELECTIONS to the membership of the Association of British Chemical Manufacturers include the United Indigo and Chemical Co., Ltd., and the United Water Softeners, Ltd.

JAMES MILLER SON AND CO., LTD., 79, West Nile Street, Glasgow, have just opened a London Office, at 81, Gracechurch Street, E.C.3. Telegrams: "Milbypro, Stock, London." 'Phone: Avenue 8616.

Mr. R. B. PILCHER, Registrar of the Institute of Chemistry, contributes to *Chemical Age* (New York) for February a message of congratulation to the American Institute of Chemistry on its foundation.

A PRIZE of a million levas is offered by the Bulgarian Government for a scientific and practical method for detecting the adulteration of attar of roses by essence of geranium, which is illegal and damages the reputation of the Bulgarian attar.

"SURPLUS," the official organ of the Disposal and Liquidation Commission, in its current monthly issue, contains information relative to the sale of air compressors, blowers, concrete block machines, condensing plant, hydro extractors and varnishes.

AT UNIVERSITY COLLEGE, LONDON, a new department of chemical engineering will shortly be established to provide for students of chemistry a sufficient training in engineering to make them effective chemists able to meet modern conditions in chemical work.

IN CONNECTION with the centenary of the United Alkali Co., Ltd., a dinner will be held at the Midland Adelphi Hotel, Liverpool, on Wednesday, April 18, "on the occasion of the one hundredth anniversary of the establishment of the alkali industry in Great Britain."

IT WAS ANNOUNCED on Monday at the Académi des Sciences in Paris that an important oilfield had been discovered in France in the Basse-Auvergne, and had produced four tons of oil. It is hoped that the field will produce five hundred tons of oil per acre when borings have been sunk further.

THE BOARD OF RESEARCH STUDIES at Cambridge report that the regulations for the degree of M.Sc. foreshadowed in their second report have been passed by the Senate and are now in operation. The number of Research students in all subjects at the end of the first year, after the present machinery had come into force, was 72, at the end of the second year 143, and at the present moment they number 179.

IT IS UNDERSTOOD that the glass industry in Belgium is in a rather grave position owing to the lack of coal. The large factories, faced by uncertainty and ignorance of the price of coal, sulphate, and "planchettes," will not quote prices. Sulphate producers quote, but with so many restrictions that their quotations are deceptive. Several factories may close down in a week or so if there is no change in the situation.

AN OFFICIAL REPORT on the imports into British India states that the total trade in dyestuffs obtained from coal tar fell from 207 to 189 lakhs for the period April to December, 1922. The British share was reduced from 58 to 15 lakhs and that of America from 24 to 7 lakhs, but Germany, who once again controls this trade, increased her share from 92 to 146 lakhs. Swiss imports fell from 9¼ lakhs to three-quarters of a lakh.

THE ASSOCIATION OF BRITISH CHEMICAL MANUFACTURERS is taking an active part in the proceedings of the Railway Rates Tribunal at present sitting. The matter under consideration is not so much the actual rates for conveyance of goods as the form of schedule for conditions of consignment. Though considerable changes may be made in this it is not expected that the position of the chemical trader will be materially affected.

THE UNITED STATES BUREAU OF MINES is doing work at Pittsburgh on the determination of fundamental data on the solubility, hygroscopicity, melting point, and decomposition temperatures of compounds used in explosives. This information will lead to the development of methods of purification and separation of materials and thereby make the handling of explosives less hazardous. The solubility of TNT in eleven solvents has been determined and the data are ready for publication.

THE BRITISH ASSOCIATION for the Advancement of Science has reprinted its report on Absorption Spectra as a separate pamphlet, price 1s.6d., which may be obtained from Burlington House, Piccadilly. This report, which was drawn up by a committee consisting of Professor I. M. Heilbron, Professor E. C. C. Baly and Professor A. W. Stewart, deals with the latest aspects of the theories of selective absorbtion spectra, and is a subject which may become of considerable practical importance to the dye chemist.

AT the Birmingham Municipal Technical School a course of three lectures has been arranged, designed especially to appeal to those engaged in the paint and varnish industry. The first contribution was made by Mr. George Howse, of Smethwick, on "White Enamels"; on March 16, the subject for discussion was "How White Lead is Manufactured," the paper being by Mr. James B. Duncan, M.Sc., F.I.C. (Messrs. Cookson and Co., Newcastle); and on March 23, Dr. Morrell (Messrs. Mander Bros., Wolverhampton) spoke on "Paints and Varnishes in the World's Work."

A SERIES OF TESTS has been started at the explosives laboratory of the United States Bureau of Mines at Pittsburgh, to determine the comparative efficiency of cyanuric triazide as a detonating agent by comparing its minimum detonating charge with pure fulminate on TNT, tetryl, T.N.A., and ammonium picrate. The physiological properties of cyanuric triazide are also being studied. The tests include application to the skin to study irritating properties and tests on animals when taken in food and breathed as vapour. Sensitiveness tests are also being made by the explosives testing section.

"THE SCIENCE OF THE ALCHEMISTS" was the subject of a lecture delivered by Mr. D. L. Woodhouse, B.Sc., before the Chemical Society of the University of Birmingham on Monday week. In the course of an account of the growth of alchemy, the lecturer traced the movements of the larger schools from the earliest times, referring briefly to the contributions to science of the Arabs and Syrians. In describing the aims and doctrines of the alchemists, quotations were made from amusing passages indicating the absurdly mystical and elaborate writings of the exponents of "the black art."

EXPERIMENTS carried out by the Agricultural Education Committee of the Staffordshire County Council showed that in cases of an early drought the application of an immediately available nitrogenous manure was essential to save a wheat crop. Nitrate of soda was preferable to nitrate of lime, sulphate of ammonia was too slow. The same order of preference was found when these substances were used as an ordinary top dressing. Some experiments on the influence of potash on the cooking qualities of potatoes produced divergent results, but it was shown that kainit was unsatisfactory as a fertiliser, often producing smaller yield than untreated land. Other potash salts, however, were good.

REPORTING on the German synthetic nitrogen products industry, Aikman (London), Ltd., state that the enormous increase in the price of these products in Germany, synchronising with the improvement in the mark, has brought many inquiries from German consumers for Chilean nitrate, and the quantity bought by them is estimated at about 10,000 tons. An announcement was made by the Stickstoff Syndicate that in order to compete with Chilean nitrate they had lowered their price for synthetic nitrate in Germany from 9,305.40 marks to 8,710 marks per unit, or at to-day's exchange rather over £13 per ton. "As, however," the report adds, "the quantity of this article produced by them is believed to be extremely small, the value of the price reduction would appear to be more sentimental than real, and when this is realised by consumers further inquiries for Chilean nitrate may be expected. It is of some significance that no reduction in the price of sulphate of ammonia, which represents a far greater production, has taken place."

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BROMINE.—The bromine industry in Germany. M. de Bussy. *Chim. et Ind.*, February, 1923, pp. 245–258.

LEATHER.—The neutralisation of chrome leather. L. Meunie and P. Chambard. *Chim. et Ind.*, February, 1923, pp. 259–263.

RESINS.—The processes of polymerisation and depolymerisation in resins. M. de Keghel. *Rev. Prod. Chim.*, February 28, 1923, pp. 109–116.

German

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TAR.—Brown coal tar, its contents and the methods of working it up. F. Frank. *Z. angew. Chem.*, March 10, 1923, pp. 141–147.

ORGANO-METALLIC COMPOUNDS.—Aromatic diarsinic acids and their reduction products. H. Lieb and O. Wintersteiner. *Ber.*, February 7, 1923, pp. 425–433.

Aluminium trialkyl etherates. E. Krause and B. Wendt. *Ber.*, February 7, 1923, pp. 466–472.

ANALYSIS.—Potentiometric titration of arsenic and antimony. E. Zintl and H. Wattenberg. *Ber.*, February 7, 1923, pp. 472–480.

Alkalimetric estimation of magnesium and calcium salts. R. Willstätter and E. Waldschmidt-Leitz. *Ber.*, February 7, 1923, pp. 488–491.

ACIDS.—Sulphonic acids. J. v. Braun and W. Kaiser. *Ber.*, February 7, 1923, pp. 549–553.

Benzopyrone sulphonic acids and coumarin mercaptans. M. Krüger. *Ber.*, February 7, 1923, pp. 480–488.

PHOTO-CHEMISTRY.—The mechanism of photo-chemical processes. Part II. The behaviour of dry oxygen-hydrogen mixture. Part III. The action of drying on the combination of chlorine and hydrogen. A. Cohen and H. Tramm. *Ber.*, February 7, 1923, pp. 455–462.

DRUGS.—The chemical and pharmacological relationship of unsaturated residues. Part IV. J. v. Braun and W. Schirmacher. *Ber.*, February 7, 1923, pp. 538–548.

PYRROLS.—The catalytic hydrogenation of alkyl-substituted pyrrol-azo-dyestuffs. Part I. H. Fischer and F. Rothweiler. *Ber.*, February 7, 1923, pp. 512–518.

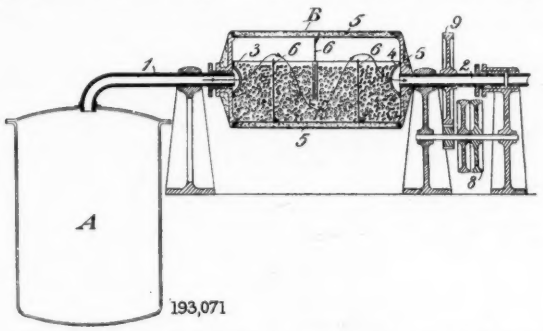
Pyrrol aldehyde and pyrrol nitrile. H. Fischer and W. Zerweck. *Ber.*, February 7, 1923, pp. 519–527.

Patent Literature

Abstracts of Complete Specifications

193,071. Low Boiling Hydrocarbons from High Boiling Hydrocarbons, Process of Producing. Plauson's (Parent Co.), Ltd., 17, Waterloo Place, Pall Mall, London, S.W.1. From H. Plauson, 14, Huxter, Hamburg, Germany. Application date, August 16, 1921.

The process is for converting high-boiling viscous brown oils such as tar, raw tar, shale and mineral oils, into low boiling hydrocarbons which are free from sulphur. The process consists in distilling the high-boiling oils with a mixture of a zinc compound, such as zinc chloride, and lime. If zinc chloride is used alone, the boiling points of the products obtained are still comparatively high, and the yield is not good, while if lime is employed alone, the boiling point is only slightly reduced and the products are coloured. In an example,



193,071

a mixture of Mexican mazout 100 parts, anhydrous zinc chloride 30 parts, and anhydrous lime 40 parts, is distilled, yielding 60 per cent. of a light yellow oil boiling at 55°–260° C. This contains the following fractions: 15·5 per cent. boiling at 55°–80° C., 70 per cent. boiling at 80°–180° C., and 14·5 per cent. boiling at 180°–260° C., the first two fractions being colourless. Another example is given of the treatment of shale oil, in which the mixture is diluted with magnesium chloride. Alternatively, the crude oil may be vaporised, and the vapour passed through a granular mixture of the zinc compound and lime. The drum *B* is half filled with the mixture, and is mounted on hollow trunnions formed by the pipes 1, 2. The oil vapour is admitted through the pipe 1 from the retort *A*, and traverses the material in a tortuous path due to the baffes 6. The drum is rotated by gearing 8, 9. The mixture may contain diluents such as sand, glass, porcelain, ceramic material, or coke.

193,079. Retorts for Distilling Carbonaceous Material. H. E. Lutz, Penn Building, Pittsburg, Pa., U.S.A. Application date, September 12, 1921.

The apparatus is for distilling carbonaceous material such as coal or shale under uniform temperature conditions which can be controlled to obtain various grades of coke and volatile products. The furnace 1 is provided with two flues, 2, 3, the flue 2 being employed during the initial stages. The vertical cylindrical retort 6 is provided with internal perforated arc-shaped walls 9, the edges of which rest against the outer walls of the retort, so that a series of perforated pockets for the carbonaceous material are arranged around the circumference. All the compartments communicate through the perforations with the central space. The retort is provided with a false bottom 16 having a central discharge passage 19 for liquid by-products. Lighter distillates pass through the pipe 22 to a condenser 23, and the condensate is collected in a tank 24. The discharge of the lighter vapour is facilitated, and its dissociation is prevented, by introducing an inert gas such as nitrogen through the pipe 26. Another inert gas or vapour from the retort 6 may be passed through the superheater 31 to an injector 32 to assist the discharge of vapour. Liquid distillates are collected in the vessel 33. The retort is heated by burners 36 arranged opposite the spaces between the compartments, so that the latter are not directly heated and the carbonaceous material within them is not overheated. The volatile products are rapidly discharged into the central space of the retort. Several different arrangements of the inner perforated walls are described, in all of which a central vapour space is provided.

Fig. 1.

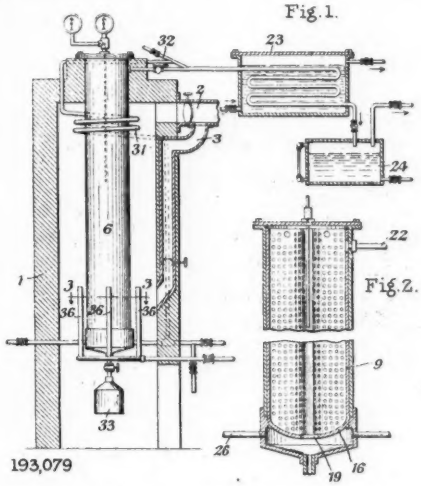


Fig. 2.

193,079

193,081. Crystalline Mineral Materials, Manufacture of. H. Wade, London. From the Carborundum Co., Niagara Falls, N.Y., U.S.A. Application date, September 19, 1921.

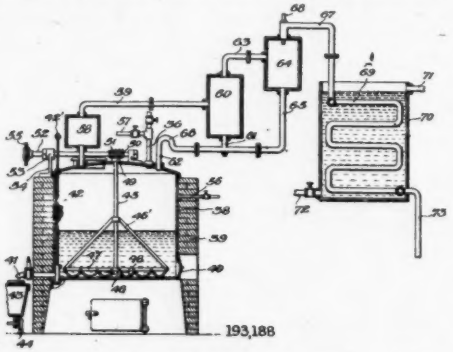
The process is for treating natural and artificial abrasives and refractories such as silicon carbide, fused crystalline abrasives, corundum, emery, garnet, quartz, silica, sand, etc., so that when such materials are mixed with a binding material such as glue, rubber, shellac, clay, cement, etc., a stronger and more coherent product is obtained. The granular material is heated with 2 per cent. of a finely divided acidic substance at a temperature above 212° F., so that a surface pitting action takes place on the granular material. Suitable acidic substances are boric acid, phosphoric acid and phosphates such as sodium, ammonium hydrogen phosphate, sodium hydrogen phosphate, calcium phosphate or iron phosphate, fluosilicic acid and fluosilicates, such as those of sodium, potassium and barium, sulphuric acid and sulphates such as those of iron, magnesium-aluminium, potassium-aluminium, or potassium-hydrogen, nitric acid and sodium or lead nitrate, chromic acid and sodium chromate, barium chromate or sodium dichromate, silicic acid and zirconium silicate or aluminium silicate, and also borates and halogen salts such as sodium fluoride. It is found that when a crystalline material is thus pitted or roughened, and then mixed with a binding material and moulded, the strength of the final product may be increased 200 per cent.

193,188. Low Boiling Oils, Manufacture of. R. Haddam, London. From Gulf Refining Co., Port Arthur, Tex., U.S.A. Application date, December 7, 1921.

The process is for treating high-boiling petroleum oils by distilling with aluminium chloride to obtain low-boiling oils. It is usually found that gasolene obtained by cracking petroleum oils is unsaturated and of inferior quality to that obtained by simple distillation, but gasolene obtained by distillation with aluminium chloride is of equal quality to that obtained by simple distillation. A mixture of gas oil boiling at 600° F. with 5 per cent. of aluminium chloride boils at 500°–550° F., and the vapour is cooled to 300°–350° F. to condense out the aluminium chloride and return it to the still. If the vapour be withdrawn at 300° F., and then condensed, a commercial gasolene is obtained. If the temperature is 275° F. a higher grade of gasolene is obtained. If the temperature is 350° F. the product contains kerosene, which may be separated by redistillation. It is necessary that the aluminium chloride and the oil should both be dry, since hydrated aluminium chloride tends to evolve hydrogen chloride gas on heating. It is found that if the aluminium chloride is mixed with oil warmed to 150° F. a thin fluid mixture is obtained which can

be pumped into the still to replenish losses. The exhausted aluminium chloride in the form of a thick material is withdrawn periodically from the still. A high yield of gasolene is obtained without the production of residues.

The oil is supplied from a pre-heater to a mixer provided with an external steam-heating coil, where it is agitated with the required amount of aluminium chloride. The mixture is then supplied by a pump through a steam-jacketed pipe to a



battery of stills. Each still comprises an iron shell 38, provided with an outlet 41 for spent material, and with a stirring device comprising a vertical shaft 45, having a horizontal arm 47 carrying chains 48. The shaft is rotated at about 14 revolutions per minute. The mixture of aluminium chloride and oil is supplied through a pipe 36, and the bulk of the oil through a pipe 57. A reflux condensing chamber 58 is provided, and the lighter vapour passes thence to an air condenser 60, provided at the base with a reflux conduit 62. The uncondensed vapour passes to another air condenser 64, also provided with a reflux pipe 65, and the uncondensed vapour from the condenser 64 passes to a water-cooled condenser 69. In a battery of such stills the stills are operated out of phase so that some may be emptied without interrupting the continuity of the process. The spent aluminium chloride is removed at intervals of about 48 hours, and each still is emptied at intervals of about two weeks.

193,200. Chlorination of Organic Compounds. A. Boake Roberts and Co., Ltd., Carpenter's Road, Stratford, London, and O. Silberrad, Research Laboratories, Buckhurst Hill, Essex. Application date, December 16, 1921.

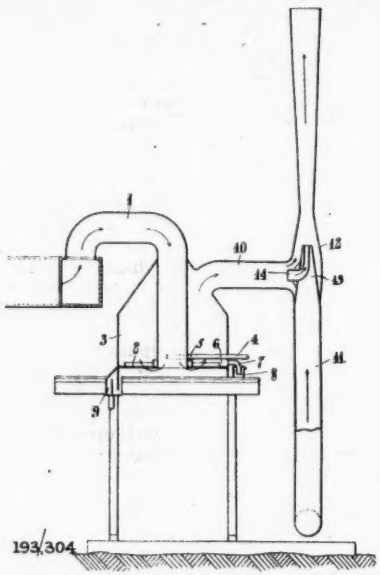
The process is more particularly for the chlorination of those organic compounds which are chlorinated with difficulty by methods at present known. In this invention the organic compound is treated with sulphuryl chloride in the presence of aluminium chloride, sulphur, or sulphur chloride, or any compound which, under the reaction conditions, yields a chloride of sulphur such as carbon bisulphide, sulphuretted hydrogen, or sulphides of iron, aluminium, antimony, phosphorus, etc. In an example, a mixture of paradichlorbenzene 294 lb., and aluminium chloride 10 lb. is placed in a water-jacketed vessel having a reflux condenser. A mixture of sulphuryl chloride 568 lb. and sulphur chloride 6 lb. is then added in a rapid stream, and chlorination proceeds. The water jacket is raised to boiling point to complete the reaction, 20 gallons of water and 20 gallons of benzene are then added, and the benzene solution of the product is allowed to crystallise. About 220 lb. of tetrachlorbenzene are obtained, and the liquor may be distilled to yield a further quantity, together with some tri-, penta- and hexa-chlorbenzene. The process is applicable to the chlorination of such compounds as anthraquinone, dianthraquinone-dihydroazine (indanthrene), naphthalene and its derivatives.

193,276. Distilling Shale and like Bituminous Fuels. Process for. H. T. P. Gee, London. From J. Pintsch, Akt.-Ges., 71–73, Andreastrasse, Berlin. Application date, February 23, 1922.

In this invention the distillation zone is separated from the gasifying zone, and the spent shale in the lower part of the apparatus is burnt by air or steam so that the fixed carbon is gasified. The distilling gas thus obtained is mixed with cold gas or air to reduce its temperature to the temperature necessary for the distillation. This hot gas mixture may be supplied to the distillation shaft either directly or through the shaft connecting it with the gasifying shaft.

193,304. Superphosphate, Manufacture of. K. B. Quinan, Somerset West, South Africa. Application date, March 23, 1922.

The object is to remove and recover the fluorine and other reaction products contained in the gases withdrawn from the "dens." The gas passes from the den through a pipe 1 to the space below the perforated diaphragm 2, which is preferably a plate $\frac{1}{4}$ inch in thickness having circular holes $\frac{1}{8}$ inch in diameter at a pitch of $\frac{1}{2}$ inch. A washing liquid, which may be water or an aqueous solution of the reaction



products, is supplied through a pipe 4 to the annular space 5, from which it flows on to the perforated diaphragm. No substantial percolation of the liquid through the diaphragm takes place, but the gas is absorbed and the liquid then passes to the annular trough 6 and outlet 7. Any liquid passing through the diaphragm is discharged to the outlet 9. The gas is drawn through the apparatus by means of a current of air passed through the conduit 11 into a "Prat" exhauster, which comprises a converging-diverging tube 12 into which the nozzle 13 discharges, while a second converging-diverging tube 14 is arranged within the nozzle. Alternatively a fan of the Kestner type may be used.

193,348. Pneumatically Conveying Granular Bulk Material, Method of and Apparatus for. H. Klug, Speestrasse, Frohnau, near Berlin, Germany. Application date, August 1, 1922.

In the conveyance of granular material by means of a current of gas under suction or pressure, a tendency has been found for the conduit to become choked, and the conduit is also subjected to rapid wear by the "creeping" movement of the grains which are continuously lifted and dropped by the current of gas. In this invention, the "creeping" is eliminated by using a pulsating current of gas in which the pulsations are of high frequency and small amplitude. These pulsations are produced by using a multi-cylinder pump having at least three pistons, or by using a device such as a vibrating valve which produces a succession of rapid impulses. With this apparatus the entire operation of conveyance is more uniform. There is less separation from a heterogeneous material, and the conduit does not become obstructed.

Note.—Abstracts of the following specifications which are now accepted, appeared in The Chemical Age when they became open to inspection nuder the International Convention :—171,117 (J. Becker) relating to coking retort ovens, see Vol. VI, p. 16; 176,779 and 181,326 (Norsk Hydro-Elektrisk Kvaelstofaktieselskab) relating to a process for the manufacture of hydrogen, carbonic oxide, or mixtures of

these, see Vol. VI, p. 636 and Vol. VII, p. 248; 180,625 (M. Melamid) relating to production of hydrocarbons of relatively low boiling point from hydrocarbons of higher boiling point, see Vol. VII, p. 132.

International Specifications not yet Accepted

192,032. SODIUM NITRATE. Guggenheim Bros., 120, Broadway, Manhattan, New York. (Assignees of E. A. C. Smith, 120, Broadway, New York. International Convention date, January 19, 1922.)

Caliche is leached at a temperature not above 60° C., and the liquor is mixed with protective agents to avoid contamination of the nitrate with sulphate cystals. The solution is then cooled in a heat interchanger to 25°–6° C., and then in a refrigerator to 0° C. to crystallise some of the nitrate. The liquor is then used again for leaching after passing through the heat interchanger, and also through the ammonia condenser if an ammonia refrigerator is used. The nitrate is obtained free from sodium chloride and sulphate. The crystallised sulphate may be removed from the refrigerator.

192,033. SULPHUR BURNING. Texas Gulf Sulphur Co., Inc., Bay City, Tex., U.S.A. Assignees of H. S. Davis, Pittsburg University, U.S.A. International Convention date, January 21, 1922.

The combustion of sulphur which contains organic impurities is facilitated by adding materials such as asbestos, magnesia, magnesium carbonate, heat-insulating brick, fuller's earth, or infusorial earth, which exert a wick-like action. In one example, the sulphur is contained in a tray constructed of one of the above substances strengthened with netting, and the molten sulphur soaks through the tray and burns underneath. A number of such trays may be arranged one above the other, with openings through which molten sulphur passes from one tray to the next. In another case a horizontal rotating cylinder may be lined internally with one of the above materials, preferably asbestos, and the sulphur burned within.

192,040. CARBONISING COAL, ETC. W. C. White, 37a, Lower Belgrave Street, Westminster. International Convention date, January 18, 1922.

The process is for the low-temperature distillation of coal, lignite, peat, shale, wood, etc. Hot gas passes from a producer through the material to be distilled, and thence through a tar-extractor. The gas is then heated again, and passed again into the retort, or a part may be withdrawn and passed through scrubbers to a gasholder. The rotary retort may have radial shelves for agitating the material.

192,041. ELECTROLYSIS. C. Bianco, 2, Via Quartieri, Turin, Italy. International Convention date, January 17, 1922.

An electrolyte for depositing zinc contains alum, boric acid, iron sulphate, sodium sulphate, sulphuric acid, and more than sufficient zinc oxide to neutralise the acid.

LATEST NOTIFICATIONS

194,652. Pulverising or grinding apparatus. Powdered Fuel Plant Co., Ltd. March 8, 1922.

194,662. Process for the manufacture of difficultly soluble soaps. Dr. T. Legradi. March 7, 1922.

194,663. Process for the preparation of magnesium carbonate from magnesium carbonates and magnesium silicates containing calcium. Hambloch, A. March 8, 1922.

194,676. Process and apparatus for the production of coarse crystals or granules from solutions. Aktieselskapet de Norske Saltverker. March 11, 1922.

194,693. Process for rapidly and uniformly ripening alkali cellulose intended for the manufacture of cellulose xanthate. Pinel, A. March 7, 1922.

194,694. Process for the manufacture of p-amino-phenol. G. Poma. March 9, 1922.

194,717. Apparatus for measuring physical or chemical values at a distance or for periodically changing the positions of movable parts at a distance. Roucka, E. March 10, 1922.

194,719. Manufacture of anhydrides of fatty acids of low molecular weight. Consortium für Elektrochemische Industrie Ges. March 10, 1922.

Specifications Accepted, with Date of Application

171,084. Soaps of all kinds. Process for the manufacture of. Plauson's Forschungsinstitut Ges. November 3, 1920.

171,094. Condensation products from formaldehyde and urea thiourea or their derivatives, Manufacture of. F. Pollak, November 3, 1920.

172,966. Anthracene, Process of producing high-percentage pure. L. Weil, and Chemische Fabrik in Billwarder vorm. Hell und Sthamer Akt.-Ges. December 17, 1920.

174,321. Hydrocarbons of relatively low boiling point, Process of producing. M. Melamid. January 15, 1921. Addition to 171,367, modified by 171,390.

180,988. Ethylene contained in industrial gases, Process for the recovery of—for the manufacture of alcohol or ether. A. A. L. J. Damiens, M. C. J. E. de Loisy, and O. J. G. Piette. June 2, 1921.

182,425. Electrically precipitating suspended particles from fluids, Apparatus for. Siemens-Schuckertwerke Ges. June 28, 1921. Addition to 174,046.

188,652. Drying gases. Nitrogen Corporation. November 9, 1921.

193,894. Boron or mixtures of boron and boron oxide for use in purifying copper castings, Production of. British Thomson-Houston Co. (*Compagnie Française Thomson-Houston.*) October 1, 1921.

193,896. Paraffin, Removing from mineral oils. M. A. Rakusin. October 3, 1921.

193,912 and 194,244. Cellulose acetate products, Treatment of. British Cellulose and Chemical Manufacturing Co., Ltd., and W. Bader. November 2, 1921.

193,922. Hydrocarbons of relatively low boiling point from hydrocarbons of higher boiling point, Process of producing. M. Melamid. November 10, 1921. Addition to 171,367, modified by 171,390, 174,321 and 180,625.

193,926. Artificial silk and the like, Manufacture of. W. Cross. (*Technochemia Akt.-Ges.*). November 24, 1921.

193,934. Mineral and other oils, Treatment of—for the production of volatile liquids adapted for use as fuel. F. de M. Accioly. November 26, 1921.

193,947. Carbonaceous material, Drying and treatment of finely divided. W. Broadbridge, E. Edser, W. W. Stenning, and Minerals Separation, Ltd. November 29, 1921.

193,979. Desulphurising oil. N. H. Freeman. December 5, 1921.

194,026. Fixation of nitrogen, Process for. Woodall, Duckham, and Jones (1920), Ltd., Oldbury S. C. Syndicate, Ltd., and Sir A. M. Duckham. December 20, 1921.

194,143. Dyeing, Mixtures for use in. British Dyestuffs Corporation, Ltd., and W. E. Sanderson. March 11, 1922.

194,165. Red basic dyestuffs, Production of. A. G. Green, E. B. Adams, and British Dyestuffs Corporation, Ltd. March 29, 1922.

194,208. Fertilizers. Soc. Anon. Produits Chimiques et Engrais L. Bernard. April 27, 1922.

Applications for Patents

Aktieselkabet Hydropeat. Manufacture of colloidal solutions of ferric oxide. 7747. March 17. (Germany, March 18, 1922.)

British Cellulose and Chemical Manufacturing Co., Ltd., and Ellis, G. H. Treatment of cellulose acetate, etc. 7770, 7771, 7773. March 17.

British Cellulose and Chemical Manufacturing Co., Ltd., and Ellis, G. H. Preparations of cellulose acetate, etc. 7772, 7774. March 17.

Coley, H. E. Manufacture of barium sulphide and hydroxide. 7505. March 15.

Coley, H. E. Manufacture of tin. 7506. March 15.

Eriksson, J. A. Manufacture of porous material from Portland cement. 7250. March 13.

Gelius, P. Production of chemically-bound solid bodies from peat. 7216. March 13.

Gifford, E. C. Interaction of ethyl ester of bromacetic acid and β amidoanthraquinone. 7751. March 17.

Internationale Bergin-Cie Voor Olie-en-Kolen-Chemie. Apparatus for indicating liquid levels in high-pressure stills, etc. 7230. March 13.

Lambert, C. F. J. Preventing formation of scale in steam boilers, etc. 7247. March 13.

Llewellyn, W. B., Spence, H., and P. Spence and Sons. Preparation of titanium compounds. 7473. March 15.

Lloyd, T. H. Method of hydrolysis in glue and gelatine manufacture 7750. March 17.

Ovenstone, J. K. Grease or oil tank and pump. 7187. March 13.

Perry, W. P. Apparatus for distilling carbonaceous material. 7078, 7079. March 12.

Sejournet, J. Manufacture of powders of alloys of magnesium and aluminium. 7076. March 12. (France, March 16, 1922.)

Sonn, Dr. Manufacture of p-phenetole-carbamide. 7507. March 15.

Stocker, T. M. Treatment and utilisation of china clay, etc. 7763. March 17.

Tyrer, D. Manufacture of a white pigment. 7434. March 14.

Waterloo Chemical Works, Ltd. Manufacture of ferric hydroxide. 7407. March 14. (Australia, March 15, 1922.)

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to* THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

London, March 22, 1923.

BUSINESS has continued generally satisfactory, although there is perhaps a slight tendency for home trade orders to drop off, doubtless due to the imminence of the Easter holidays. Prices have not altered to any great extent, although quotations for imported products still continue to harden. German quotations are not so much in evidence.

Export inquiry has been good, but a considerable volume has to be refused owing to the unremunerative figures offered.

General Chemicals

ACETONE continues scarce and firm, and there seems no prospects of lower figures for some time to come.

ACID ACETIC maintains its advance and the demand is satisfactory.

ACID CITRIC.—Business is only moderate, but the undertone is firm.

ACID FORMIC is inclined to harden. Continental quotations are higher.

ACID LACTIC is unchanged and in poor demand.

ACID OXALIC is in fairly satisfactory request and the price is maintained.

ACID TARTARIC.—The price is higher and supplies are light.

ARSENIC.—Unchanged, but in slightly better supply for forward.

BARIUM CHLORIDE.—The price is higher and the demand is well maintained.

COPPER SULPHATE.—Substantial inquiry, but actual business closed only of moderate dimensions.

FORMALDEHYDE.—Firm and scarce, and a further advance not unlikely.

LEAD ACETATE.—Again higher in sympathy with the advance in the metal.

LEAD NITRATE.—Very firm and in better request.

METHYL ALCOHOL.—Unchanged; supplies continue very light.

POTASSIUM CARBONATE.—The higher tendency still in evidence, but the demand is by no means good.

POTASSIUM CAUSTIC.—The price has advanced, and would rise further if business developed.

POTASSIUM PERMANGANATE.—Higher and in good demand.

POTASSIUM PRUSSIATE is in good request; price unchanged.

SODIUM ACETATE has advanced. Supplies are very scarce.

SODIUM BICHROMATE.—Price unchanged; demand moderate.

SODIUM HYPOSULPHITE.—In good request at English makers' figures.

SODIUM NITRITE.—Demand good and price inclined to harden.

SODIUM PRUSSIATE is scarce and firm, and inquiries are heavy.

SODIUM SULPHIDE.—The price is inclined to be steadier and the demand is slightly better.

ZINC OXIDE.—Scarce and firm.

ZINC SULPHATE.—The price has hardened and supplies are inclined to be light.

Coal Tar Intermediates

There is no very material change to report in the situation.

ALPHA NAPHTHOL has been without special feature.

ALPHA NAPHTHYLAMINE is in good demand, and the price is slightly firmer.

ANILINE OIL AND SALT have been inquired for, both on home and on export account.

BENZALDEHYDE.—Some fair export inquiries are in the market.

BENZIDINE BASE.—Home business has been booked, and the price is steady.

BETA NAPHTHOL has been slightly more interesting on export account.

DIPHENYLAMINE is very firm.

"H" ACID is in fair demand, and the price is steady.

NITRO BENZOL.—Some fair home and export business has been booked.

PARADICHLORBENZOL.—Continental buyers are showing rather more interest in this product.

PARANITRANILINE.—Home inquires have been received.

PARAPHENYLENEDIAMINE is firm, with home business passing.

RESORCIN is without change.

Coal Tar Products

The firm tone of the market in Coal Tar products is well maintained, but in many cases business is being restricted because of the excessively high levels reached.

90% BENZOL has a better inquiry and shows signs of improvement. The price is still in the region of 1s. 6d. per gallon on rails, however.

PURE BENZOL has also a slightly better inquiry and supplies are plentiful. It is worth about 1s. 10d. to 1s. 11d. per gallon in the North and about 2s. 1d. to 2s. 2d. per gallon in the South.

CREOSOTE OIL remains very firm, and supplies are scarce for the near position. It is worth about 9d. per gallon in the Midlands and North, and 9¼d. to 9¾d. per gallon in the South.

CRESYLIC ACID is steady at about 2s. per gallon on rails for the pale quality, 97/99%, while the dark, 95/97%, is worth about 1s. 10d. per gallon on rails.

SOLVENT NAPHTHA has a poor inquiry, and supplies are plentiful. It is worth about 1s. 4d. per gallon on rails in the North, while the price in London is about 1s. 8d. to 1s. 9d.

HEAVY NAPHTHA is also uninteresting, at about 1s. 6d. per gallon on rails.

NAPHTHALENES are very strong, and supplies are difficult to obtain for the near position. Lower melting points are worth about £8 to £9 per ton, while hot pressed is worth about £12 per ton.

PITCH.—Prices still have an upward tendency. It is reported that 200s. f.o.b., East Coast port and London, has been paid, and makers are now asking even higher figures.

Sulphate of Ammonia

This remains in good demand and prices are unchanged.

Current Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride	lb.	0	1	7	to	0	1	9
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	130	0	0	to	135	0	0
Acid, Acetic, glacial, 99–100%	ton	69	0	0	to	70	0	0
Acetic, 80% pure	ton	48	0	0	to	49	0	0
Acetic, 40% pure	ton	25	0	0	to	26	0	0
Arsenic, liquid, 2000 s.g.	ton	100	0	0	to	105	0	0
Boric, cryst.	ton	55	0	0	to	60	0	0
Carbolic, cryst. 39–40%	lb.	0	1	7	to	0	1	8
Citric	lb.	0	1	9	to	0	1	10
Formic, 80%	ton	52	10	0	to	53	0	0
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	41	0	0	to	43	0	0
Lactic, 60 vol.	ton	43	0	0	to	44	0	0
Nitric, 80 Tw.	ton	27	0	0	to	28	0	0
Oxalic	lb.	0	0	6¾	to	0	0	7
Phosphoric, 1.5	ton	40	0	0	to	42	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0

	Per	£	s.	d.		£	s.	d.
Acid Salicylic, Technical	lb.	0	1	9	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	4	to	0	1	4½
Alum, lump	ton	12	10	0	to	13	0	0
Alum, chrome	ton	28	0	0	to	29	0	0
Alumino ferric	ton	9	0	0	to	9	5	0
Aluminium, sulphate, 14–15%	ton	7	10	0	to	8	0	0
Aluminium, sulphate, 17–18%	ton	9	10	0	to	10	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
Ammonia, .880	ton	32	0	0	to	34	0	0
Ammonia, .920	ton	22	0	0	to	24	0	0
Ammonia, carbonate	lb.	0	0	4	to	0	0	4½
Ammonia, chloride	ton	50	0	0	to	55	0	0
Ammonia, muriate (galvanisers)	ton	35	0	0	to	37	10	0
Ammonia, nitrate (pure)	ton	35	0	0	to	40	0	0
Ammonia, phosphate	ton	65	0	0	to	68	0	0
Ammonia, sulphocyanide, com'l, 90%	lb.	0	1	1	to	0	1	3
Amyl acetate	ton	175	0	0	to	185	0	0
Arsenic, white, powdered	ton	70	0	0	to	75	0	0
Barium, carbonate, Witherite	ton	5	0	0	to	6	0	0
Barium carbonate, Precip.	ton	15	0	0	to	16	0	0
Barium, Chlorate	ton	65	0	0	to	70	0	0
Barium Chloride	ton	17	0	0	to	17	10	0
Nitrate	ton	33	0	0	to	35	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	1	0	to	0	1	1
Bleaching powder, 35–37%	ton	10	10	0	to	11	0	0
Borax crystals	ton	28	0	0	to	32	0	0
Calcium acetate, Brown	ton	11	10	0	to	12	0	0
" " Grey	ton	19	15	0	to	20	0	0
Calcium Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	6	0	0	to	7	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	105	0	0	to	110	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	2	to	0	1	3
Sulphate	ton	27	0	0	to	28	0	0
Cream Tartar, 98–100%	ton	92	10	0	to	95	0	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	92	10	0	to	95	0	0
Formusol (Rongalite)	lb.	0	2	2	to	0	2	3
Glauber salts, commercial	ton	5	0	0	to	5	10	0
Glycerin, crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal.	0	2	2	to	0	2	3
Iron perchloride	ton	30	0	0	to	32	0	0
Iron sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	42	0	0	to	44	0	0
Carbonate (White Lead)	ton	45	0	0	to	48	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	35	10	0	to	36	0	0
Lithopone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	5	10	0	to	6	0	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	6	10	0	to	7	0	0
Sulphate (Druggists')	ton	10	0	0	to	11	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	58	0	0	to	60	0	0
Methyl acetone	ton	71	0	0	to	75	0	0
Alcohol, 1% acetone	ton	105	0	0	to	110	0	0
Nickel sulphate, single salt	ton	41	0	0	to	42	0	0
Ammonium sulphate, double salt	ton	41	0	0	to	42	0	0
Potash, Caustic	ton	33	0	0	to	34	0	0
Potassium bichromate	lb.	0	0	5¾	to	0	0	6
Carbonate, 90%	ton	31	0	0	to	32	0	0
Chloride, 80%	ton	9	10	0	to	10	10	0
Chlorate	lb.	0	0	4½	to	0	0	4½
Metabisulphite, 50–52%	ton	84	0	0	to	90	0	0
Nitrate, refined	ton	43	0	0	to	45	0	0
Permanganate	lb.	0	0	9½	to	0	0	10
Prussiate, red	lb.	0	4	3	to	0	4	6
Prussiate, yellow	lb	0	1	5½	to	0	1	6
Sulphate, 90%	ton	12	10	0	to	13	10	0
Salammoniac, firsts	cwt.	3	3	0	to		—	
Seconds	cwt.	3	0	0	to		—	
Sodium acetate	ton	24	15	0	to	25	0	0
Arseniate, 45%	ton	48	0	0	to	50	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to	0	0	4½
Bisulphite 60–62%	ton	21	0	0	to	23	0	0
Chlorate	lb.	0	0	3½	to	0	0	3¾
Caustic, 70%	ton	19	10	0	to	20	0	0
Sodium Caustic, 76%	ton	20	10	0	to	21	0	0
Hydrosulphite, powder	lb.	0	1	6	to	0	1	7
Hyposulphite, commercial	ton	10	10	0	to	11	0	0
Nitrite, 96–98%	ton	28	0	0	to	29	0	0
Phosphate, crystal	ton	16	0	0	to	16	10	0
Perborate	lb.	0	0	11	to	0	0	11½
Prussiate	lb.	0	0	9½	to	0	0	9¾
Sulphide, crystals	ton	10	10	0	to	11	0	0
Sulphide, solid, 60–62%	ton	16	10	0	to	17	10	0
Sulphite, cryst.	ton	12	10	0	to	13	0	0
Strontium carbonate	ton	55	0	0	to	60	0	0
Strontium Nitrate	ton	40	0	0	to	42	0	0
Strontium Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Sulphur, Flowers	ton	11	10	0	to	12	10	0
Roll	ton	11	0	0	to	12	0	0
Tartar emetic	lb.	0	1	4	to	0	1	5
Tin perchloride, 33%	lb.	0	1	2	to	0	1	4
Perchloride, solid	lb.	0	1	5	to	0	1	7
Protochloride (tin crystals)	lb.	0	1	4	to	0	1	5
Zinc chloride 102° Tw.	ton	21	0	0	to	22	10	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	40	0	0	to	42	0	0
Dust, 90%	ton	45	0	0	to	47	10	0
Sulphate	ton	16	10	0	to	17	10	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	2	to	0	3	6
Acetanilid	lb.	0	1	6	to	0	1	9
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, 1.21	lb.	0	2	9	to	0	3	0
Salicylic, B.P.	lb.	0	2	2	to	0	2	6
Tannic, leviss	lb.	0	3	4	to	0	3	6
Amidol	lb.	0	8	6	to	0	8	9
Amidopyrin	lb.	0	13	0	to	0	13	6
Ammon ichthosulphonate	lb.	0	2	0	to	0	2	3
Barbitone	lb.	0	14	6	to	0	15	0
Beta naphthol resublimed	lb.	0	1	9	to	0	2	0
Bromide of ammonia	lb.	0	0	7½	to	0	0	8
Potash	lb.	0	0	7	to	0	0	7½
Soda	lb.	0	0	7½	to	0	0	8½
Caffeine, pure	lb.	0	12	0	to	0	12	3
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Calcium lactate	lb.	0	2	0	to	0	2	3
Calomel	lb.	0	4	9	to	0	5	0
Chloral hydrate	lb.	0	4	0	to	0	4	3
Cocaine alkaloid	oz.	0	18	0	to	0	18	6
Cocain hydrochloride	oz.	0	14	9	to	0	15	0
Corrosive sublimate	lb.	0	4	3	to	0	4	6
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	1	6	to	0	1	6½
B.P. (75–80% eucalyptol)	lb.	0	1	7	to	0	1	7½
Guaiacol carbonate	lb.	0	8	3	to	0	8	6
Liquid	lb.	0	9	0	to	0	9	6
Pure crystals	lb.	0	10	0	to	0	10	6
Hexamine	lb.	0	4	3	to	0	4	6
Hydroquinone	lb.	0	3	3	to	0	3	6
Lanoline anhydrous	lb.	0	0	7	to	0	0	7½
Lecithin ex ovo	lb.	0	18	6	to	1	0	0
Lithia carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	6	to	0	2	9
Metol	lb.	0	9	6	to	0	10	0
Milk sugar	cwt.	4	15	0	to	5	0	0
Paraldehyde	lb.	0	1	6	to	0	1	9
Phenacetin	lb.	0	5	9	to	0	6	3
Phenazone	lb.	0	7	3	to	0	7	6
Phenolphthalein	lb.	0	4	10	to	0	5	0
Potassium sulpho guaiacolate	lb.	0	5	0	to	0	5	3
Quinine sulphate, B.P.	oz.	0	2	3			—	
Resorcine, medicinal	lb.	0	5	3	to	0	5	6
Salicylate of soda powder	lb.	0	2	6	to	0	2	9
Crystals	lb.	0	2	9	to	0	3	0
Salol	lb.	0	2	6	to	0	2	9
Soda Benzoate	lb.	0	2	3	to	0	2	6
Sulphonal	lb.	0	13	6	to	0	14	0
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	12	0	to	0	12	6
" soda salicylate	lb.	0	7	9	to	0	8	3
Vanillin	lb.	1	3	6	to	1	4	6

Coal Tar Intermediates, &c.

Alphanaphthol, crude	lb.	0	2	0	to	0	2	3
Alphanaphthol, refined	lb.	0	2	6	to	0	2	9
Alphanaphthylamine	lb.	0	1	6	to	0	1	7
Aniline oil, drums extra	lb.	0	0	9½	to	0	0	10
Aniline salts	lb.	0	0	9½	to	0	0	10

	Per	£	s.	d.		£	s	d.
Benzidine, sulphate	lb.	0	3	9	to	0	4	0
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Croceine Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	4	to	0	1	5
Dinitrophenol	lb.	0	1	7	to	0	1	9
Dimethylaniline	lb.	0	3	0	to	0	3	3
Diphenylamine	lb.	0	3	9	to	0	4	0
H-Acid	lb.	0	5	0	to	0	5	3
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	5	6	to	0	6	0
Naphthionic acid, crude	lb.	0	2	3	to	0	2	6
Naphthionate of Soda	lb.	0	2	6	to	0	2	9
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Neville Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	8	to	0	0	8
Nitronaphthalene	lb.	0	1	0	to	0	1	1
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol, base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Para-amidophenol, hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	6	to	0	0	7
Paranitraniline	lb.	0	2	7	to	0	2	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	9	to	0	6	3
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin, technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	10	to	0	0	11
Tolidine, base	lb.	0	7	3	to	0	7	9
Tolidine, mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

		£	s.	d.
ESSENTIAL OILS.				
Anise	c.i.f. 1/10 spot	0	2	0
Bay		0	11	0
Bergamot	firmer	0	12	0
Cajuput		0	3	9
Camphor, white	per cwt.	4	0	0
Camphor, brown	„	3	15	0
Cassia	c.i.f. 7/9 spot firmer	0	8	3
Cedarwood		0	1	6
Citronella (Ceylon)	firmer	0	3	3
Citronella (Java)	firmer	0	3	10
Clove		0	7	6
Eucalyptus		0	1	6
Geranium Bourbon	firmer	1	8	0
Lavender		0	11	0
Lavender spike		0	3	0
Lemon		0	2	11
Lemongrass	per oz.	0	0	2½
Lime (distilled)		0	3	0
Orange sweet (Sicilian)		0	9	6
Orange sweet (West Indian)		0	9	0
Palmarosa		0	17	6
Peppermint (American)		0	13	0
Mint (dementholised Japanese)		0	6	6
Patchouli		1	12	0
Otto of Rose	per oz.	1	4	0
Rosemary		0	1	8
Sandalwood	firm	1	6	0
Sassafras		0	5	0
Thyme	(firm) according to quality	2/6	to	0 8 0
SYNTHETICS.				
Benzyl acetate		0	3	0
Benzyl benzoate		0	3	0
Citral	easier	0	10	0
Coumarine		0	12	6
Heliotropine	firmer	0	6	6
Ionone	easier	1	5	0
Linalyl acetate		1	2	6
Methyl salicylate	very firm and scarce	0	2	6
Musk xylol		0	9	0
Terpeniol	firm	0	3	0

The Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, March 22, 1923.

BUSINESS in chemicals here has again been fairly satisfactory considering the state of the Lancashire cotton industry. To some extent the reduced consumption of chemicals in that direction has been counterbalanced by an improved demand from other branches of industry which normally are large users of chemical products. On the export side inquiries from the Dominions have been fairly numerous and business has been reasonably active in certain of the principal "heavies." Trade on Continental account, however, shows no improvement. Active support of chemical shares has been a marked feature on the Manchester Stock Exchange.

Heavy Chemicals

Caustic soda continues to be called for in steady quantities both on home and export account at from £19 per ton for 60 per cent. to £21 10s. for 76–77 per cent. strength. Bleaching powder is also in comparatively good demand for home consumers and for shipment at £11 10s. per ton. Soda crystals are steady at £5 5s. per ton delivered, but business is only of moderate dimensions. A fairly active home demand for saltcake is still being experienced, and prices are steady at £4 10s. per ton; the inquiry for export is also rather brisk. Sodium sulphide, 60 to 65 per cent. concentrated, is a dull section though prices are unchanged at £15 per ton, with crystals at about £9. Glauber salts are in quietly steady demand at £4 per ton. Bicarbonate of soda is firm at £10 10s. per ton delivered to home consumers, a moderate amount of business being done. Alkali keeps active both for home consumption and for shipment at about £7 12s. 6d. per ton for 58 per cent. material. Hyposulphite of soda is quiet and easier at £15 10s. per ton for photographic crystals and £10 to £10 10s. for commercial. There has been little improvement in the demand for nitrite of soda, though prices are firm at £26 10s. to £27 per ton. Phosphate of soda is inactive at £15 per ton. Chlorate of soda still attracts a fair amount of attention at 2¾d. to 3d. per lb. The demand for prussiate of soda is rather quieter at 9¼d. per lb. Bichromate of soda is steady and in moderate inquiry at 4½d. per lb. Acetate of soda is moving satisfactorily at about £24 per ton.

The firmness of caustic potash is well maintained at £32 to £33 per ton for 88–90 per cent., the demand being steady. Carbonate of potash is also active and unchanged at about £26 per ton for 90 per cent. material. Bichromate of potash meets with a fair demand at 5¾d. per lb. Yellow prussiate of potash is steady at 1s. 5½d. per lb., but business is only moderate. Chlorate of potash is still quiet but steady at 3¼d. per lb. Permanganate remains at 8½d. to 9d. per lb.

The demand for sulphate of copper is said to have shown some improvement in certain directions but there is no alteration in prices, which are maintained at £26 to £27 per ton. The export inquiry for arsenic keeps up, and prices are firm and unchanged at £75 per ton for white powdered, Cornish makes. Commercial Epsom salts are in moderate inquiry at £6 10s. per ton for British makes; magnesium sulphate, B.P., is quoted round £7. Acetate of lime is still rather scarce; grey is firmer at £20 per ton, with brown nominally £10 10s. Nitrate of lead is steady and in fair inquiry at £42 10s. per ton. White sugar of lead is now quoted at £40 per ton, about the same price ruling for brown.

Acids and Tar Products

The improvement in tartaric acid continues, and the price is very firm at 1s. 2½d. per lb. Citric acid, B.P. crystals, is well maintained at 1s. 8d. per lb., sellers meeting with a moderately active demand. Acetic acid is a very firm section, with buyers taking fair quantities; glacial is unchanged at £66 to £67, 80 per cent. technical being stronger at £46 per ton.

Pitch supplies are very scarce for prompt shipment, and on a steady inquiry on Continental account quotations are now £9 and over per ton, f.o.b. Manchester. Carbolic acid crystals are also in active export demand, and price is firmer at 1s. 8d. per lb.; 60 per cent. crude is quoted at 4s. to 4s. 6d. per gallon. Benzole keeps quiet but unchanged at 1s. 8d. per gallon. Solvent naphtha is steady at 1s. 9d. per gallon, but business is rather quiet. The demand for creosote oil is still good and prices are firmer at round 9d. per gallon. Refined naphthalene is on offer at about £17 per ton and crude at £6 10s. to £11 per ton according to quality.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, March 21, 1923.

THERE has been a considerable amount of business put through during the past week, mainly in Continental material, stocks of which are becoming low, with little likelihood of replacement so long as the Franco-Belgian occupation of the Ruhr and Rhine areas continues. Prices asked for remaining stocks are firm, with an appreciable advance in some products, notably Caustic Potash and Acetic Acid.

Industrial Chemicals

ACID ACETIC.—Glacial, 98/100%, £61 to £67 per ton; 80% pure, £45 to £47 per ton; 80% technical, £44 to £46 per ton; c.i.f. U.K. ports.

ACID BORACIC.—Price unchanged, crystal or granulated, £55 per ton; powdered, £57 per ton; carriage paid U.K. stations.

ACID CITRIC.—Spot lots quoted 1s. 7d. per lb. Offered at 1s. 6d. per lb. for forward delivery.

ACID FORMIC 80%.—Now offered at £57 per ton, ex store.

ACID HYDROCHLORIC.—Unchanged at 6s. 6d. per carboy, ex works.

ACID NITRIC 84°.—£27 10s. per ton, ex station, full truck loads.

ACID OXALIC.—Remains about 7d. per lb. spot delivery.

ACID SULPHURIC.—144°, £3 15s. per ton; 168°, £7 per ton, ex works. Dearsenicated quality, £1 per ton more.

ACID TARTARIC.—Slightly higher at 1s. 2½d. per lb., ex store.

ALUM, LUMP POTASH.—Quoted £13 10s. per ton, ex store, spot delivery.

AMMONIA, ANHYDROUS.—Unchanged at 1s. 6d. per lb., ex station.

AMMONIA, CARBONATE.—Lump, 4d. per lb.; ground, 4¼d. per lb. delivered.

AMMONIA, LIQUID.—880°, 3d. per lb.; 920°, 1¾d. per lb., ex works.

AMMONIA, MURIATE.—Grey galvanisers quality, quoted £31 per ton, f.o.r. works.

AMMONIA, SULPHATE.—25¼%, £15 10s. per ton; 25¾% neutral, £16 13s. per ton, ex works. March–May delivery.

ARSENIC, WHITE POWDERED.—Good export inquiry, spot lots about £77 per ton, ex quay.

BARIUM CHLORIDE.—Unchanged at about £18 per ton, spot delivery.

BARYTES.—English white powdered, £5 5s. per ton, ex works.

BLEACHING POWDER.—Spot lots, £11 10s. per ton, ex station. Contracts 20s. per ton less.

BORAX.—Crystal or granulated, £28 per ton; powdered, £29 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English material, £5 15s. per ton, ex quay. Continental make now quoted £5 per ton, c.i.f. U.K.

COPPER SULPHATE.—Quoted £25 per ton, f.o.b. U.K. In little request.

COPPERAS, GREEN.—Price about £2 10s. to £2 15s. per ton, f.o.b. U.K.

FORMALDEHYDE 40%.—Scarce for spot delivery. About £93 per ton, ex store.

GLAUBER SALTS.—Fine white crystals £4 per ton, ex store.

LEAD, RED.—English make, £43 per ton, carriage paid U.K. Continental material still available at about £37 per ton, ex store.

LEAD ACETATE.—White crystals now quoted £40 per ton, ex store.

MAGNESITE.—Ground calcined, unchanged at £8 10s. per ton, ex station.

MAGNESIUM CHLORIDE.—Now quoted £3 10s. per ton, c.i.f. U.K., but delivery doubtful. Spot lots £5 per ton, ex store.

MAGNESIUM SULPHATE (Epsom Salts).—Commercial quality, £7 per ton; B.P. quality, £8 10s. per ton, delivered; B.P. for export quoted £6 10s. per ton, f.o.b. U.K. port.

POTASH, CAUSTIC.—Now quoted £32 10s. per ton, c.i.f. U.K., but shipment doubtful; £33 to £35 per ton asked for spot lots.

POTASSIUM BICHROMATE.—English makers' price unchanged, 5¾d. per lb. delivered.

POTASSIUM CARBONATE 90–92%.—Quoted £27 15s. per ton, ex store spot delivery.

POTASSIUM CHLORATE.—Crystal or powdered, 3d. per lb., ex store.

POTASSIUM MURIATE.—Quoted £9 per ton, basis 80%, f.o.r. works.

POTASSIUM PERMANGANATE.—B.P. quality now quoted 10d. per lb., ex store.

POTASSIUM PRUSSIATE (YELLOW).—Spot lots offeredat 1s. 5½d. per lb.

POTASSIUM SULPHATE.—£7 5s. per ton, basis 80%, free on rails, ex works.

SODA, CAUSTIC.—76/77%, £21 10s. per ton; 70/72%, £20 per ton; 60/62%, broken, £21 5s. per ton; 98/99%, powdered, £24 17s. 6d. per ton, ex station, spot delivery. Good inquiry of higher strengths for export.

SODIUM ACETATE.—Price about £25 per ton, ex store, spot delivery.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex station; M.W. quality, 30s. per ton, less.

SODIUM BICHROMATE.—English makers' price unchanged, 4½d. per lb., delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; alkali 58%, £8 17s. 6d. per ton, ex quay or station, spot delivery.

SODIUM CHLORATE.—Spot lots now quoted about 3d. per lb.

SODIUM HYPOSULPHITE.—Commercial quality £10 per ton; crystals, £15 10s. per ton, ex station.

SODIUM NITRATE, 96/98%.—Refined quality quoted £13 10s. per ton, f.o.r. or f.o.b. U.K.

SODIUM NITRITE, 100%.—Quoted £27 to £29 per ton, according to quantity.

SODIUM PRUSSIATE (YELLOW).—Price about 9d. per lb., ex store.

SODIUM SULPHATE (SALTCAKE 95%).—Price £4 per ton, on contract for home consumption.

SODIUM SULPHIDE, 60/62%.—Continental prices now about £16 10s. per ton, c.i.f. U.K. Spot lots offered at £17 per ton, ex store.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £8 per ton; ground, £8 per ton. Prices nominal.

TIN CRYSTALS.—Unchanged at 1s. 2d. per lb.

ZINC CHLORIDE.—98% solid English material, £25 per ton, f.o.b. U.K. port.

ZINC SULPHATE.—Quoted £14 10s. per ton, ex station.

NOTE.—The above prices are for bulk purposes and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

AMIDO NAPHTHOL SULPHONIC ACID, 1, 2, 4.—Export inquiry. Price quoted, 4s. per lb. f.o.b.

ANTHRA QUINONE.—Some inquiry. Price 3s. 3d. per lb.

BETA NAPHTHYLAMINE.—Small export inquiry. Price quoted, 4s. per lb. f.o.b.

DIMETHYLANILINE.—Some inquiries. Price 3s. per lb. delivered, drums returnable.

GAMMA ACID.—Export inquiry. Price quoted, 13s. 9d. per lb., 100% basis, f.o.b.

"H" ACID.—In good demand. Price 5s. per lb. 100% basis.

PARADICHLORBENZOL.—Good export demand. Price inclined to harden at £50 per ton, f.o.b.

PARAPHENYLENEDIAMINE BASE.—In good demand for export. Price quoted 12s. 6d. per lb., 100% basis, f.o.b.

PARA TOLUIDINE.—Export inquiry. Price quoted, 5s. per lb., f.o.b.

SCHAEFFER SALT.—Export inquiry. Price 5s. per lb., 100% basis, f.o.b.

Company News

AMERICAN CYANAMID CO.—A dividend of 1½ per cent. is announced on the 6 per cent. preferred stock.

THE WELSBACH LIGHT CO., LTD.—The debenture stock registers are closed until March 31, for the preparation of the half-yearly interest warrants.

VIROL, LTD.—The transfer books and register of the 7 per cent. preference shares will be closed from March 24 to March 31, both days inclusive.

THARSIS SULPHUR AND COPPER CO.—A dividend of 12½ per cent., equal to 5s. per share, has been declared payable, less tax, from the profits of 1922.

"SHELL" TRANSPORT AND TRADING CO.—The first preference share transfer books are closed until April 1, for preparation of dividend warrants, payable on March 31.

W. J. BUSH AND CO., LTD.—The share and debenture transfer books are closed until March 31, for the preparation of the debenture interest and preference dividend warrants.

BROKEN HILL PROPRIETARY CO.—Coupon No. 5 of the 7 per cent. "B" debentures will be paid on and after April 3, at the Commonwealth Bank of Australia, 36-41, New Broad Street, London, E.C.

UNITED ALKALI CO., LTD.—The directors have declared a dividend of 2s. per share on the ordinary shares for 1921, and a sum of £375,000 is carried forward. It is proposed to capitalise £300,000 and to give one fully-paid ordinary share for every two shares held.

ASSOCIATED PORTLAND CEMENT MANUFACTURERS, LTD.—The transfer books and register of members of the company's 5½ per cent. cumulative preference shares were closed on March 17 and will remain closed until March 31, for the preparation of the half-yearly interest warrants.

ASBESTOS CORPORATION OF CANADA.—The operating profits for 1922 were $727,093, and the net income was $879,285. After meeting bond interest, setting aide $194,299 for depreciation, and paying dividends amounting to 6 per cent. on the common stock, there is an available balance of $2,211,076.

NATIONAL MATCH FACTORY OF VENEZUELA.—The accounts for the year to August 31 last show a trading profit of £8,439. After providing £1,299 for income-tax and directors' further remuneration, and deducting a debit balance of £6,877 brought in, there remains a credit balance of £263 to be carried forward.

ABERTHAW AND BRISTOL CHANNEL PORTLAND CEMENT CO., LTD.—In their report for the year 1922, the directors state that it is now proposed to call up the unpaid ordinary capital. The authorised ordinary capital is £250,000 in £1 shares, 150,000 being fully-paid and 100,000 having 5s. per share called.

TARMAC, LTD.—The net profit for 1922 was £106,765, to which is added £7,024 brought in, making a total of £113,789. The directors have set aside the sum of £19,003 to meet depreciations of works and equipment, and recommend a final dividend of 2s. per share, making 15 per cent., free of tax, for the year, transferring £15,000 to general reserve, and £2,000 to a proposed staff superannuation fund, leaving £14,286 to be carried forward.

BRITISH INSULATED AND HELSBY CABLES, LTD.—The profit for 1922, including £362,223 brought forward, was £708,840. The directors have placed £40,000 to depreciation on buildings, plant, etc., £50,000 to reserve, and £5,000 to first debenture redemption account. They propose to pay a further dividend of 6¼ per cent. on the ordinary shares, together with a bonus of 5 per cent., making a total distribution of 15 per cent. for the year, and £391,675 is carried forward.

UNITED PREMIER OIL AND CAKE CO., LTD.—The net profit for 1922 was £90,649. After deducting debenture interest and sinking fund there is a balance of £62,467, to which is added £20,138 brought in, making a total of £82,605. After paying the preference dividend the directors recommend a dividend of 5 per cent., less tax, on the ordinary shares, leaving £20,518 to be carried forward. The registers and transfer books of the ordinary shares will be closed until March 28.

BRITISH PORTLAND CEMENT MANUFACTURERS.—The revenue for 1922, after providing for taxation, amounted to £451,223, which, with £186,628 brought forward, makes £637,851. After allowing for debenture interest and redemption, etc., placing £125,000 to general depreciation reserve account, and £5,000 to barge depreciation account, there remains a balance of £397,206. The directors recommend a final dividend on the ordinary shares of 5 per cent., making 10 per cent. for the year, leaving £188,144 to be carried forward.

SALT UNION, LTD.—The net profit for 1922 was £207,878. After adding £21,562 brought forward, and deducting debenture interest, there remains an available balance of £180,228. It is proposed to pay a dividend of 2s. 4d. per share on the preference shares, and 2s. per share on the ordinary shares. The staff superannuation fund is to be increased by £10,000, and £20,228 is carried forward. The report states that the quantity of salt delivered during the past year showed a satisfactory increase as compared with the previous year, the lower cost of production enabling the company to recover some portion of the trade in fishery salt, and also to secure a larger share of shipments to those overseas markets subject to most competition.

PINCHIN, JOHNSON AND CO.—The net profit for 1922, after providing for all expenses, depreciation, and taxation, was £70,549, to which is added £16,512 brought in, making a total of £87,061. After paying the preference dividend, the directors recommend a further dividend of 10 per cent. on the ordinary shares, making 15 per cent. for the year, less tax. The sum of £6,000 is written off the preliminary expenses of the new capital issue and £7,000 is placed to general reserve, leaving £16,905 to be carried forward. The report states that, in spite of the continuance of difficult trading conditions all over the world during the past year, the company's business shows a gratifying increase in every section, and there has been a satisfactory development of the company's business both at home and abroad. The ordinary share transfer books will be closed from March 26 to March 28, both days inclusive, for the preparation of dividend warrants.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIAL.	REF. NO.
British West Indies	Chemicals, drugs, oils, explosives, paints; laboratory equipment and supplies, etc.	370
France.....	Pharmaceutical products	378

Contracts Open

Tenders are invited for the following articles. The latest dates for receiving tenders are, when available, given in parentheses:

EGYPT.—Oils, paints and varnishes. Particulars from Department of Overseas Trade (Room 53), 35, Old Queen Street, London, S.W.1. Reference No. 10205/F.E./C.C.(2).

LONDON (April 17).—Disinfectants and chemicals. Particulars from the Office of the Town Clerk, Public Health Department, Guildhall, E.C.2.

HAYES (April 9).—Refined tar. Particulars from D. C. Fidler, Council Offices, Hayes, Middlesex.

Tariff Changes

AUSTRIA.—An import licence is now required for the following articles: Opium; grinding and polishing materials; plates and sheets of zinc; lead foil and tin foil; tubes, etc., of tin; tinned lead; lead alloys; wares of copper, aluminium, nickel, etc.; common salt; soda of all kinds, washing materials containing soda; calcium carbide; oil varnishes and lac varnishes; explosives; alkaloids injurious to health. A special export licence is also required for sulphate of ammonia, for crude anthracene, naphthalene, carbolic acid, and fusel oil, and for chlorosulphonic acid.

FRENCH SOMALILAND.—The import of alkaloids and other poisonous substances is now controlled by special regulations.

THE BRITISH ALIZARINE COMPANY LTD.

Manchester London Glasgow

Manufacturers of Alizarine Dyestuffs

ALIZARINE RED (all shades)

ALIZARINE BLUES (soluble and insoluble)

ALIZARINE BORDEAUX

ALIZARINE CYANINE

ALIZARINE GREEN (soluble and insoluble)

ALIZARINE ORANGE

ALIZARINE RED S. POWDER

ALIZARINE BLUE BLACK

ALIZARINE (MADDER) LAKES (of all qualities)

ALIZARINE MAROON

ALIZUROL GREEN (Viridine)

ANTHRACENE BROWN

ALIZANTHRENE BLUE

ALIZANTHRENE BROWN

ALIZANTHRENE YELLOW

Other fast colours of this series in course of preparation

Anthraquinone, Silver Salt and all intermediates of this series

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CHROME TANNING and other Chrome Compounds

TELEPHONES
663 Trafford Park, MANCHESTER
660 EAST LONDON
3007 DOUGLAS, GLASGOW

TELEGRAMS:
BRITALIZ MANCHESTER
BRITALIZ LONDON
BRITALIZ GLASGOW

All communications should be addressed to

The British Alizarine Co., Ltd.
Trafford Park, Manchester

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

Receiverships

MAWSON CO., LTD. (R., 24/3/23).—T. C. Martin, of Milburn House, Newcastle-on-Tyne, was appointed Receiver on March 8, 1923, under powers contained in debenture, dated February 23, 1921.

TRIAD CO., LTD. (R., 24/3/22). W. Moore, A.C.I.S., of 25, Victoria Street, S.W.1, was appointed Receiver and manager on March 13, 1923, under powers contained in first mortage debenture dated July 31, 1922.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BRITISH MAGNESITE CALCINING CO., LTD., London, S.W. (M., 24/3/23). Registered March 10. £75,000 debentures (filed under section 93 (3) of the Companies (Consolidation) Act, 1908), present issue £53,000; general charge. *Nil. March 14, 1922.

Satisfactions

CLEMENT AND JOHNSON, LTD., London, W.C., manufacturing chemists. (M.S., 24/3/23).—Satisfaction registered March 9. £1,000 (not exceeded) and all moneys, etc. Registered August 23, 1920.

LIVER GREASE OIL AND CHEMICAL CO., LTD., Liverpool. (M.S., 24/3/23).—Satisfaction registered March 9. £2,000, part of amount registered May 20, 1921.

London Gazette

Notice of Intended Dividend

BROOKS, Tom Cheetham, trading as R. CHEETHAM AND CO., 25 and 54, George Street, and 4, Chorlton Street, Manchester, chemist and analyst. Last day for receiving proofs, April 6. Trustees: R. Heatley, 33, Brazennose Street, Manchester, and A. T. Eaves, 15, Fountain Street, Manchester.

Partnerships Dissolved

SAUNDERS AND BARTLETT (William George SAUNDERS and Herbert Palmer BARTLETT), suede cleaners, manufacturers and paint and varnish factors, 144, Cumberland Road, Bristol, by mutual consent as from January 1, 1923. Debts received and paid by H. P. Bartlett.

KRASA, HAYDEN AND CO. (Mathias Marcel WELLENSTEIN and Leopold Jack KRASA), general merchants and druggists' sundriesmen, 7, Wood Street Square, by mutual consent as from March 1, 1923. Debts received and paid by M. M. Wellenstein, who will continue the business.

New Companies Registered

WILLIAM EVERARD DAVIES AND CO., LTD., Wellington House, Buckingham Gate, London, S.W.1. Engineers, consultants, chemists, etc. Nominal capital, £10,000 in 4,000 shares of £1 each and 120,000 shares of 1s. each.

FRIPPS, LTD., soap makers, perfumers, paper and varnish makers, etc. Nominal capital, £1,000 in £1 shares. A subscriber: E. Walls, Riversley, 2, Litfield Place, Clifton, Bristol.

F. S. LINECAR, LTD., 43, Northcross Road, East Dulwich, London, S.E. Chemists, druggists, drysalters, etc. Nominal capital, £600 in £1 shares.

RICHARD LORD AND CO. LTD., 14, Tontine Street, Blackburn. Manufacturers of and dealers in dental and surgical appliances, chemists, druggists, drysalters, etc. Nominal capital, £1,000 in £1 shares.

NUTRIMENT, LTD.—To acquire certain patents relating to a process for the extraction of proteids and lactose from whey, etc. Nominal capital, £5,000 in £1 shares. A subscriber: H. T. Gay, 85, Gracechurch Street, London, E.C.

PREMIER PRODUCTS, LTD., 23, Austin Friars, London, E.C. Manufacturers of and dealers in all kinds of paint, oil, briquets, lime, clay, tar, etc. Nominal capital, £20,000 in £1 shares.

PROPRIETORS OF RAPSIB, LTD.—To acquire an invention and secret process for the manufacture of a paint or solution for removing scales, fur, rust, etc., from boilers, boiler tubes, etc. Nominal capital, £100 in 1s. shares. A subscriber: G. T. Heard, 50, Devonshire Road, Merton, S.W.19.

The Priestley Lecture

In connection with the jubilee celebration of the founding of the Birmingham and Midland Institute Scientific Society, a meeting was held at the Institute last week, when Sir Oliver Lodge delivered the Priestley Lecture. Sir Oliver said he supposed they associated Priestley with their jubilee because he was one of the two great Birmingham scientific men whom they honoured, the other being Watt. All knew that Birmingham of that day behaved very badly. It was no time for free inquiry, and Priestley had to flee first to London and ultimately to the United States, because in London, too, he was pursued by persecution. Now, of course, they wished to honour him in every way, for he was one of the great scientific men of our age. He discovered more gases than anybody, unless it was Sir William Ramsay. He was a pertinacious experimenter, pursuing wherever the facts led him. The man who did that must hit upon new facts. Sir Oliver went on to enumerate many of Priestley's electrical experiments.

Dealers Posing as Manufacturers

In the United States the Federal Trade Commission has recently decreed that a firm advertising as a manufacturer and not owning or controlling a factory is engaging in unfair competition. This is a result of a case arising out of the fact that the American Turpentine Co., a firm trading under the name of the North American Fibre Products Co., Cleveland, Ohio, advertised in such a way as to indicate that its products (paints, varnishes, etc.) were manufactured in its own factories. On investigation it was discovered that the firm neither owned nor controlled factories, and that these factories listed in their advertisements were in reality those of manufacturers from whom they purchased goods for resale purposes. The Commission has therefore issued an order that a firm must not advertise as a manufacturer unless factories are actually owned or operated by it.

French Potash

TRADE in French potash salts has shown fair activity during the past week. There has been a good demand for all grades at prices which are expected to remain steady. At this time of year, with the increased volume of trade in potash fertilisers, difficulty is usually experienced in effecting prompt execution of orders. The larger percentage of orders are for kainit 14 per cent. and sylvinite 20 per cent.; although muriate has lately been in better demand. Sales of sulphate, however, are slower, but abroad the more concentrated grades find a ready market. In America sales of all grades have satisfactorily increased, and shipments are being quickly absorbed. This increased trade is not expected to influence the supplies available for export to this country, as the French potash mines are effectively meeting the increasing demand for French potash salts.—*French Potash Mines Bureau.*